

WIFI BASED ATTENDANCE SYSTEM

A Project report submitted in partial fulfillment of the requirements for the award of

degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY AND SCIENCES

(UGC AUTONOMOUS)

*(Permanently Affiliated to AU, Approved by AICTE and Accredited by NBA & NAAC with „A”
Grade)Sangivalasa, bheemili mandal, visakhapatnam dist.(A.P) 2018-2019*

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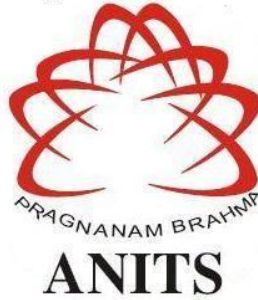
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CERTIFICATE

*This is to certify that the project report entitled “Wifi Based Attendance System ” submitted by R.Siva kumar(316126512163), U.Hima kiran (316126512174), B.Ganesh(316126512190) , V.Rama rao(316126512202) in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Electronics & Communication Engineering** of Andhra University, Visakhapatnam is a record of bonafide work carried out under my guidance and supervision.*

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CONTENTS

ABSTRACT	i
LIST OF SYMBOLS	ii
LIST OF FIGURES	iii
LIST OF TABLES	iv
LIST OF ABBREVIATIONS	v
CHAPTER 1 INTRODUCTION	1-2
1.1 Project Objective	1
1.2 Project Outline	1-2
CHAPTER 2 WIFI TECHNOLOGY	3- 9
2.1 Introduction	3
2.2 Wifi Topologies	3-4
2.3 Communication Stack	5
2.4 Modes	6-7
2.5 Interference	7-8
2.6 Routers	8
2.7 Hotspots	8-9
CHAPTER 3 WIRELESS INTERNET	10 - 13
3.1 Introduction	10
3.2 How does Wifi Network works	10
3.2.1 From wireless to Radio	10
3.2.2 From Radio to Wifi	10-11
3.2.3 Wifi	11-12
3.3 Advantages of Wifi	12-13
CHAPTER 4 SOFTWARE TOOLS	14 - 39

4.1 Kodular	14
4.2 Components	14-21
4.3 Blocks	21-28
4.4 Data Types	28
4.5 Xampp Server	28-29
4.5.1 How to install it	29-39
CHAPTER 5 METHODOLOGY OF PROJECT	40 - 41
5.1 Project Description	40
5.2 Algorithm	40
5.3 Flowchart	41
CHAPTER 6 RESULTS AND DISCUSSIONS	42-54
CONCLUSIONS	55
REFERENCE	56

ABSTRACT

This project presents a design and framework for taking attendance in college at the end or starting of every period within the classroom making the troublesome process of taking and compiling of attendance simple and efficient, so that the teacher can concentrate on teaching and doesn't invest time on classroom attendance collection. In this system, during every period the respective teacher generates a Wi-Fi hotspot to which a student can connect his/her mobile phone with the help of an android application. Here teacher will generate a QR and students are required to scan the generated QR and need to enter their details to get their attendance marked.

1. INTRODUCTION

1.1 Project Objective:

In present days, Educational institutions are concerned mostly about the irregularity of the student attendance. The conventional attendance system which is taking attendance by calling names is, time consuming and inaccurate. Hence, this work automates the conventional attendance system in an efficient manner.

1.2 Project Outline:

This work presents a design and framework for taking attendance in college at the end of every period within the classroom, for making troublesome process of taking and compiling of attendance simple and efficient, so that the teacher can concentrate on the class and doesn't invest time on classroom attendance collection.

In this system, during every period the respective teacher generates a Wi-Fi hotspot to which a student can connect his/her mobile phone with the help of an android application. Here teacher will generate a QR and students are required to scan the generated QR and need to enter their details to get their attendance marked. The android application designed will compare the data of the students with its background mobile database. Thus, the process continues further. Finally the list absentee in the class is displayed in the android application. This system can also be used maintain attendance of Employees/workers in an organization.

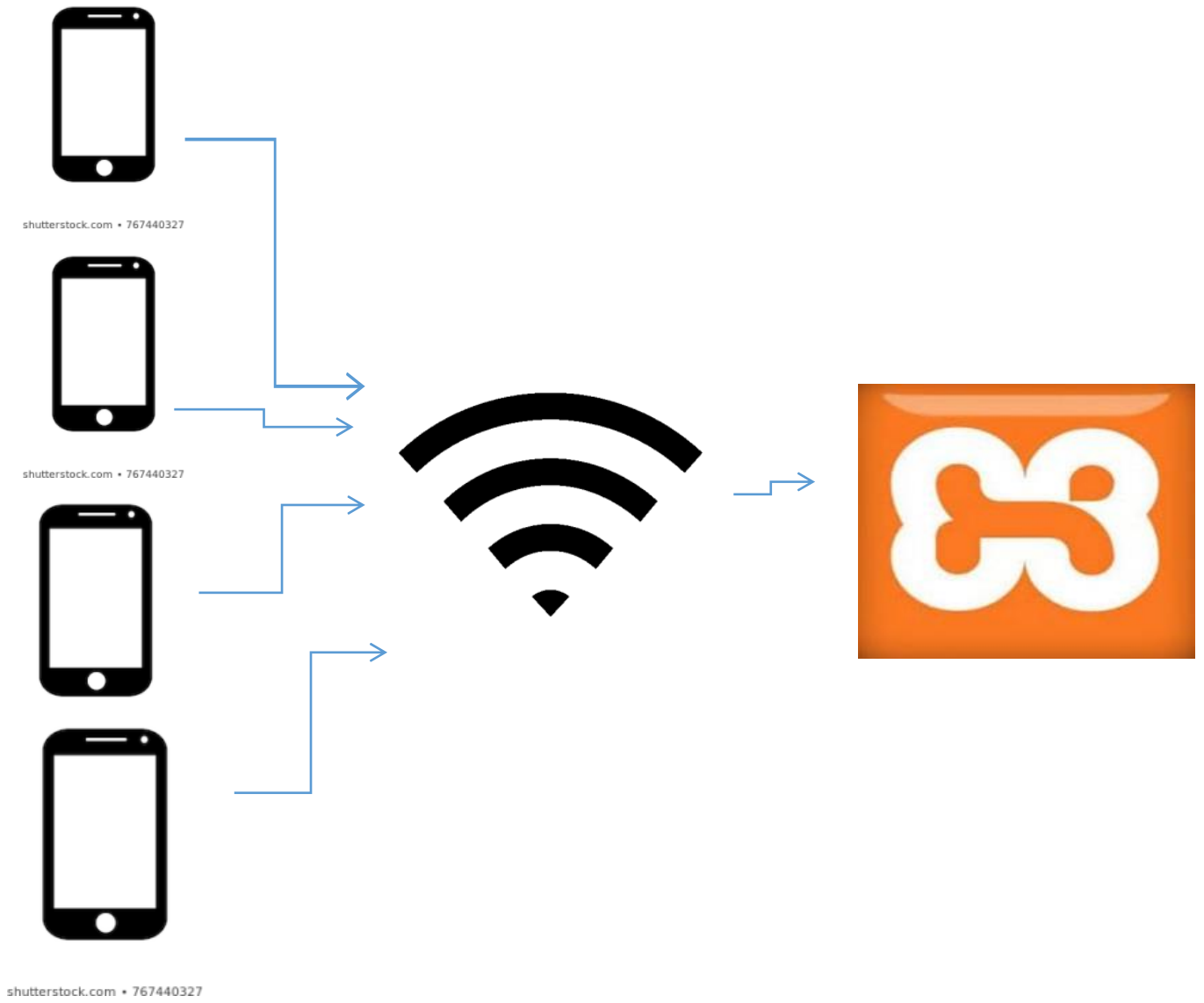


Figure 1.1 Project Outline

2.WIFI TECHNOLOGY

2.1 Introduction:

WIFI is an alternative network to wired network which is commonly used for connecting devices in wireless mode. WIFI is stand for Wireless Fidelity is generic term that refers to IEEE802.11 standard for Wireless Local Networks or WLANs. WIFI connects computers to each other, to the internet and to the wired network.

A 1985 ruling by the U.S. Federal Communications Commission released the ISM band for unlicensed use. These frequency bands are the same ones used by equipment such as microwave ovens and are subject to interference. In 1991, NCR Corporation with AT&T Corporation invented the precursor to 802.11, intended for use in cashier systems, under the name Wave LAN.

The Australian radio-astronomer Dr John O'Sullivan with his colleagues Terence Percival, Graham Daniels, Diet Ostry, and John Deane developed a key patent used in Wi-Fi as a by-product of a Commonwealth Scientific and Industrial Research Organization (CSIRO) research project, "a failed experiment to detect exploding mini black holes the size of an atomic particle". Dr O'Sullivan and his colleagues are credited with inventing Wi-Fi. In 1992 and 1996, CSIRO obtained patents for a method later used in Wi-Fi to "unsmear" the signal.

The first version of the 802.11 protocol was released in 1997, and provided up to 2 Mbit/s link speeds. This was updated in 1999 with 802.11b to permit 11 Mbit/s link speeds, and this proved popular.

2.2 WIFI Topologies:

There are a great number of network topologies in existence, each with different strengths and weaknesses. The simplest network is **point- to-point**. This is a single network connection between two nodes. In reality, it's now pretty rare to want to connect only two nodes except in certain critical or special applications. A modern example would be the kind of ad-hoc connections made via Bluetooth for things like Apple's Airdrop file sharing service or remote control of e.g. model airplanes.

The simplest way to add more nodes to our network is by daisy-chaining, which comes in two flavors: Linear and Ring. **Linear** daisy-chaining connects the third node to one of the existing nodes, the fourth to the third, and so on. It's a simple method but quickly becomes impractical as you

add more nodes.

In a **Ring** network, our third node is connected to both existing nodes. Each further node is added in between two existing nodes to create a loop. Each node is connected to exactly two other nodes. Data is transmitted around the ring, either in one direction or both, and each node examines the data and acts on it or retransmits it until it reaches its destination. Daisy-chaining could be used to create a network for connected devices, such as smart light bulbs, but there are better solutions for most use-cases.

In **Bus** topology, we connect all devices to a central backbone (known as a bus). This is similar to a Linear topology but with a single line having multiple single branches. This is a common topology in wired networks but doesn't have any real analogues in the wireless world.

The topology that is most useful for wireless networking at the moment is the **Star**, in which each node connects to a central hub that distributes the data wherever it needs to go. The most obvious example of this would be a home network. All of the nodes – phones, printers, tablets etc. – connect to the wireless access point (hub), which is usually both a router for the local network and a bridge to the Internet. Star networks are highly suitable for connecting both wired and wireless nodes together seamlessly. This is a simple way of implementing a wireless network, but it has two major challenges. The hub at the center of the system is a single point of failure. If the hub fails, the entire network ceases to exist, leaving devices unable to communicate at all. It also relies on devices being within a certain distance of the hub.

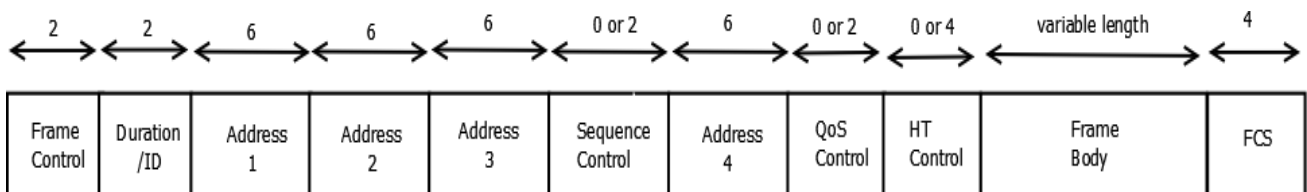
There are two types of Mesh network – full and partial. In a full Mesh network, each node is connected directly to every other node. This is great for resilience but does nothing to add range. These are only really implemented in, for example, military networks where 100% redundancy is essential.

Partial mesh networks, on the other hand, involve each node being connected to one or several other nodes. Being connected to multiple other nodes adds resilience, as there is no single point of transmission failure. It also improves range as node A may be out of direct range with node C, but the message may still get through via node B.

Mesh networks are the biggest area of development in the IoT as they theoretically allow infinite devices to be connected across infinite distance. Using Mesh networks, resilient smart homes, smart businesses and smart cities become a real possibility.

2.3 Communication stack:

Wi-Fi is part of the IEEE 802 protocol family. The data is organized into 802.11 frames that are very similar to Ethernet frames at the data link layer, but with extra address fields. MAC addresses are used as network addresses for routing over the LAN.



Wi-Fi's MAC and physical layer (PHY) specifications are defined by IEEE 802.11 for modulating and receiving one or more carrier waves to transmit the data in the infrared, and 2.4, 3.6, 5, or 60 GHz frequency bands. They are created and maintained by the IEEE LAN/MAN Standards Committee (IEEE 802). The base version of the standard was released in 1997, and has had many subsequent amendments. The standard and amendments provide the basis for wireless network products using the Wi-Fi brand. While each amendment is officially revoked when it is incorporated in the latest version of the standard, the corporate world tends to market to the revisions because they concisely denote capabilities of their products. As a result, in the market place, each revision tends to become its own standard.

In addition to 802.11 the IEEE 802 protocol family has specific provisions for Wi-Fi. These are required because Ethernet's cable-based media are not usually shared, whereas with wireless all transmissions are received by all stations within range that employ that radio channel. While Ethernet has essentially negligible error rates, wireless communication media are subject to significant interference. Therefore, accurate transmission is not guaranteed so delivery is therefore a best-effort delivery mechanism. Because of this, for Wi-Fi, the Logical Link Control (LLC) specified by IEEE 802.2 employs Wi-Fi's media access control (MAC) protocols to manage retries without relying on higher levels of the protocol stack.

2.4 Modes:

Infrastructure



Depiction of a Wi-Fi network in infrastructure mode. The device sends information wirelessly to another device, both connected to the local network, in order to print a document. In infrastructure mode, which is the most common mode used, all communications go through a base station. For communications within the network, this introduces an extra use of the airwaves, but has the advantage that any two stations that can communicate with the base station can also communicate through the base station, which enormously simplifies the protocols.

Ad hoc and Wi-Fi direct

Wi-Fi also allows communications directly from one computer to another without an access point intermediary. This is called *ad hoc* Wi-Fi transmission. Different types of ad hoc network exist. In the simplest case network nodes must talk directly to each other. In more complex protocols nodes may forward packets, and nodes keep track of how to reach other nodes, even if they move around.

Ad-hoc mode was first invented and realized by Chai Keong Toh in his 1996 invention of Wi-Fi ad-hoc routing, implemented on Lucent WaveLAN 802.11a wireless on IBM Think Pads over a size nodes scenario spanning a region of over a mile. The success was recorded in *Mobile Computing* magazine (1999) and later published formally in *IEEE Transactions on Wireless Communications*, 2002 and *ACM SIGMETRICS Performance Evaluation Review*, 2001.

This wireless ad hoc network mode has proven popular with multiplayer handheld game consoles, such as the Nintendo DS, PlayStation Portable, digital cameras, and other consumer electronics devices.

Some devices can also share their Internet connection using ad hoc, becoming hotspots or "virtual routers".

Similarly, the Wi-Fi Alliance promotes the specification Wi-Fi Direct for file transfers and media sharing through a new discovery- and security-methodology. Wi-Fi Direct launched in October 2010.

Another mode of direct communication over Wi-Fi is Tunneled Direct Link Setup (TDLS), which enables two devices on the same Wi-Fi network to communicate directly, instead of via the access point.

2.5 Interference:

Wi-Fi connections can be blocked or the Internet speed lowered by having other devices in the same area. Wi-Fi protocols are designed to share the wavebands reasonably fairly, and this often works with little to no disruption. To minimize collisions with Wi-Fi and non Wi-Fi devices, Wi-Fi employs Carrier-sense multiple access with collision avoidance (CSMA/CA), where transmitters listen before transmitting, and delay transmission of packets if they detect that other devices are active on the channel, or if noise is detected from adjacent channels or from non Wi-Fi sources. Nevertheless, Wi-Fi networks are still susceptible to the hidden node and exposed node problem.

A standard speed Wi-Fi signal occupies five channels in the 2.4 GHz band. Interference can be caused by overlapping channels. Any two channel numbers that differ by five or more, such as 2 and 7, do not overlap (no adjacent-channel interference). The oft-repeated adage that channels 1, 6, and 11 are the *only* non-overlapping channels is, therefore, not accurate. Channels 1, 6, and 11 are the only *group of three* non-overlapping channels in North America. However, whether the overlap is significant depends on physical spacing. Channels that are four apart interfere a negligible amount- much less than reusing channels (which causes co-channel interference)-if transmitters are at least a few metres apart. In Europe and Japan where channel 13 is available, using Channels 1, 5, 9, and 13 for 802.11g and 802.11n is recommended.

However, many 2.4 GHz 802.11b and 802.11g access-points default to the same channel on initial startup, contributing to congestion on certain channels. Wi-Fi pollution, or an excessive number of access points in the area, can prevent access and interfere with other devices' use of other access points as well as with decreased signal-to-noise ratio (SNR) between access points. These issues can become a problem in high-density areas, such as large apartment complexes or office buildings with many Wi-Fi access points. Wi-Fi 6 has greatly improved power control, and suffers less from

interference in congested areas.

Other devices use the 2.4 GHz band: microwave ovens, ISM band devices, security cameras, ZigBee devices, Bluetooth devices, video senders, cordless phones, baby monitors, and, in some countries, amateur radio, all of which can cause significant additional interference. It is also an issue when municipalities or other large entities (such as universities) seek to provide large area coverage. On some 5 GHz bands interference from radar systems can occur in some places. For base stations that support those bands they employ Dynamic Frequency Selection which listens for radar, and if it is found, will not permit a network on that band.

These bands can be used by low power transmitters without a license, and with few restrictions. However, while unintended interference is common, users that have been found to cause deliberate interference (particularly for attempting to locally monopolize these bands for commercial purposes) have been issued large fines.

2.6 Router:

Wireless routers integrate a Wireless Access Point, Ethernet switch, and internal router firmware application that provides IP routing, NAT, and DNS forwarding through an integrated WAN-interface. A wireless router allows wired and wireless Ethernet LAN devices to connect to a (usually) single WAN device such as a cable modem, DSL modem or optical modem. A wireless router allows all three devices, mainly the access point and router, to be configured through one central utility. This utility is usually an integrated web server that is accessible to wired and wireless LAN clients and often optionally to WAN clients. This utility may also be an application that is run on a computer, as is the case with as Apple's AirPort, which is managed with the AirPort Utility on macOS and iOS.

2.7 Hotspots:

A Hotspot is a geographical area that has a readily accessible wireless network .Hotspots are equipped with Broad band Internet connection and one or more Access points that allow users to access the internet wirelessly. Hotspots can be setup in any public location that can support

An Internet connection. All the locations discussed previously are examples of Hotspots. Hotspots can be setup in any public location that can support an Internet connection. All the locations discussed previously are examples of Hotspots.A private hotspot, often called a tether, may be configured on a smartphone or tablet that has a mobile network data plan, to allow Internet access to other devices via Bluetooth pairing, or through the RNDIS protocol over USB, or even when both the hotspot device and the device[s] accessing it are connected to the same Wi-Fi network but one

which does not provide Internet access. Similarly, a Bluetooth or USB OTG can be used by a mobile device to provide Internet access via Wi-Fi instead of a mobile network, to a device that itself has neither Wi-Fi nor mobile network capability.

Public hotspots may be created by a business for use by customers, such as coffee shops or hotels. Public hotspots are typically created from wireless access points configured to provide Internet access, controlled to some degree by the venue. In its simplest form, venues that have broadband Internet access can create public wireless access by configuring an access point (AP), in conjunction with a router to connect the AP to the Internet. A single wireless router combining these functions may suffice.

3.WIRELESS INTERNET

3.1 Introduction:

Imagine for a moment if all the wireless connections in the world were instantly replaced by cables. You'd have cables stretching through the air from every radio in every home hundreds of miles back to the transmitters. You'd have wires reaching from every cellphone to every phone mast. Radio-controlled cars would disappear too, replaced by yet more cables. You couldn't step out of the door without tripping over cables. You couldn't fly a plane through the sky without getting tangled up. If you peered through your window, you'd see nothing at all but a cats-cradle of wires. That, then, is the brilliance of wireless: it does away with all those cables, leaving our lives simple, uncluttered, and free! Let's take a closer look at how it works.

3.2 How does Wifi network works :

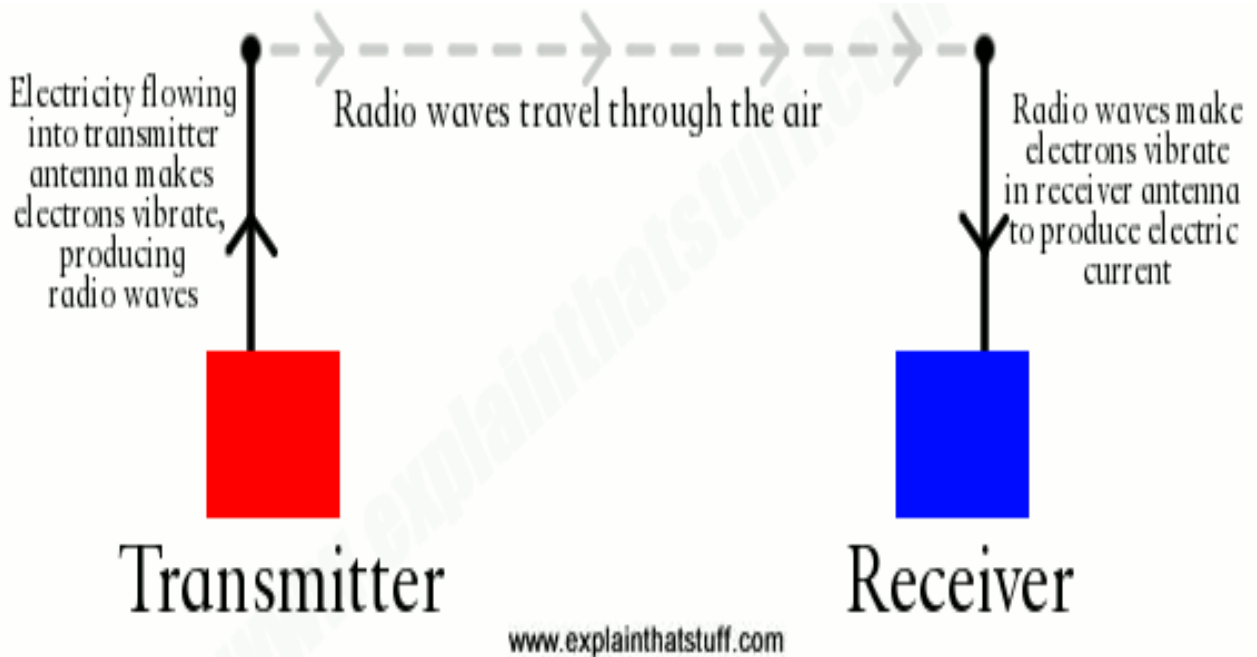
3.2.1 From wireless to radio:

Wireless started out as a way of sending audio programs through the air. Pretty soon we started calling it radio and, when pictures were added to the signal, TV was born. The word "wireless" had become pretty old-fashioned by the mid-20th century, but over the last few years it's made a comeback. Now it's hip to be wireless once again thanks to the Internet. Back in 2007, approximately half of all the world's Internet users were using some kind of wireless access. In 2019, over 80 percent of us use wireless to get online at home, which is hardly surprising now more of us now are using smartphones and tablets (54.8 percent) than desktop computers (45.2 percent). Wireless, mobile Internet is overwhelmingly popular in developing countries where traditional wired forms of access, based on telephone networks, are not available. Wireless Internet, perhaps best known to us as Wi-Fi, has made the Internet more convenient than ever before.

3.2.2 From radio to Wi-Fi:

Radio is an invisible game of throw-and-catch. Instead of throwing a ball from one person to another, you send information, coded as a pattern of electricity and magnetism, from a transmitter (the thrower) to a receiver (the catcher)—both of which are kinds of antennas. The transmitter is a piece of equipment that turns electrical signals (such as the sound of someone speaking, in radio, or a picture, in TV) into an oscillating electromagnetic wave that beams through the air, in a straight line, at the speed of light (300,000 km 186,000 miles per second).

The receiver is a mirror-image piece of equipment that catches the waves and turns them back into electrical signals—so we can recreate the radio sounds or TV pictures. The more powerful the transmitter and receiver, the further apart they can be spaced. Radio stations use gigantic transmitters, and that's why we can pick up radio signals from thousands of miles away on the opposite side of Earth. Wireless Internet is simply a way of using radio waves to send and receive Internet data instead of radio sounds or TV pictures.



But, unlike radio and TV, it is typically used to send signals only over relatively short distances with low-power transmitters.

3.2.3 Wi-Fi :

If you have wireless Internet access at home, you probably have a little box called a router that plugs into your telephone socket. This kind of router is a bit like a sophisticated modem: it's a standalone computer whose job is to relay connections to and from the Internet. At home, you might use a router to connect several computers to the Internet at once (saving on the need for several separate modems). In other words, the router does two jobs: it creates a wireless computer network, linking all your computers together, and it also gives all your machines a shared gateway to the Internet. You can connect a router to all your different computers using ordinary network-connecting cables (for the technically minded, these are called RJ-45, Cat 5, or Ethernet cables). This creates

what's called a LAN (local area network) linking the machines together. A computer network is a very orderly affair, more like an organized committee meeting, with carefully agreed rules of behavior, than a free-for-all cocktail party. The machines on the network have to be hooked up in a

standard way and they communicate in a very orderly fashion.

The rules that govern the network setup and the communication are based on an international standard called Ethernet (also known as IEEE 802.3).

A wireless router is simply a router that connects to your computer (or computers) using radio waves instead of cables. It contains a very low- power radio transmitter and receiver, with a maximum range of about 90 meters or 300 ft, depending on what your walls are made of and what other electrical equipment is nearby. The router can send and receive Internet data to any computer in your home that is also equipped with wireless access (so each computer on the wireless network has to have a radio transmitter and receiver in it too). Most new laptops come with wireless cards built in. For older laptops, you can usually plug a wireless adapter card into the PCMCIA or USB socket. In effect, the router becomes an informal access point for the Internet, creating an invisible "cloud" of wireless connectivity all around it, known as a hotspot. Any computer inside this cloud can connect into the network, forming a wireless LAN.

3.3 Advantages of Wi-Fi

- **Increased Mobility:** Wireless networks allow mobile users to access real-time information so they can roam around your company's space without getting disconnected from the network. This increases teamwork and productivity company- wide that is not possible with traditional networks.
- **Installation Speed and Simplicity:** Installing a wireless network system reduces cables, which are cumbersome to setup and can impose a safety risk, should employees trip on them. It can also be installed quickly and easily, when compared to a traditional network.
- **Wider Reach of the Network:** The wireless network can be extended to places in your organization that are not accessible for wires and cables.
- **More Flexibility:** Should your network change in the future, you can easily update the wireless network to meet new configurations.
- **Reduced Cost of Ownership over Time:** Wireless networking may carry a slightly higher initial investment, but the overall expenses over time are lower. It also may have a longer lifecycle than a traditionally connected network.

- **Increased Scalability:** Wireless systems can be specifically configured to meet the needs of specific applications. These can be easily changed and scaled depending on your organization's needs.

4. SOFTWARE TOOLS

4.1 Kodular:

Kodular allows you to create Android apps easily with a blocks- type editor. No coding skills required. With the Material Design UI, your apps will stand out.

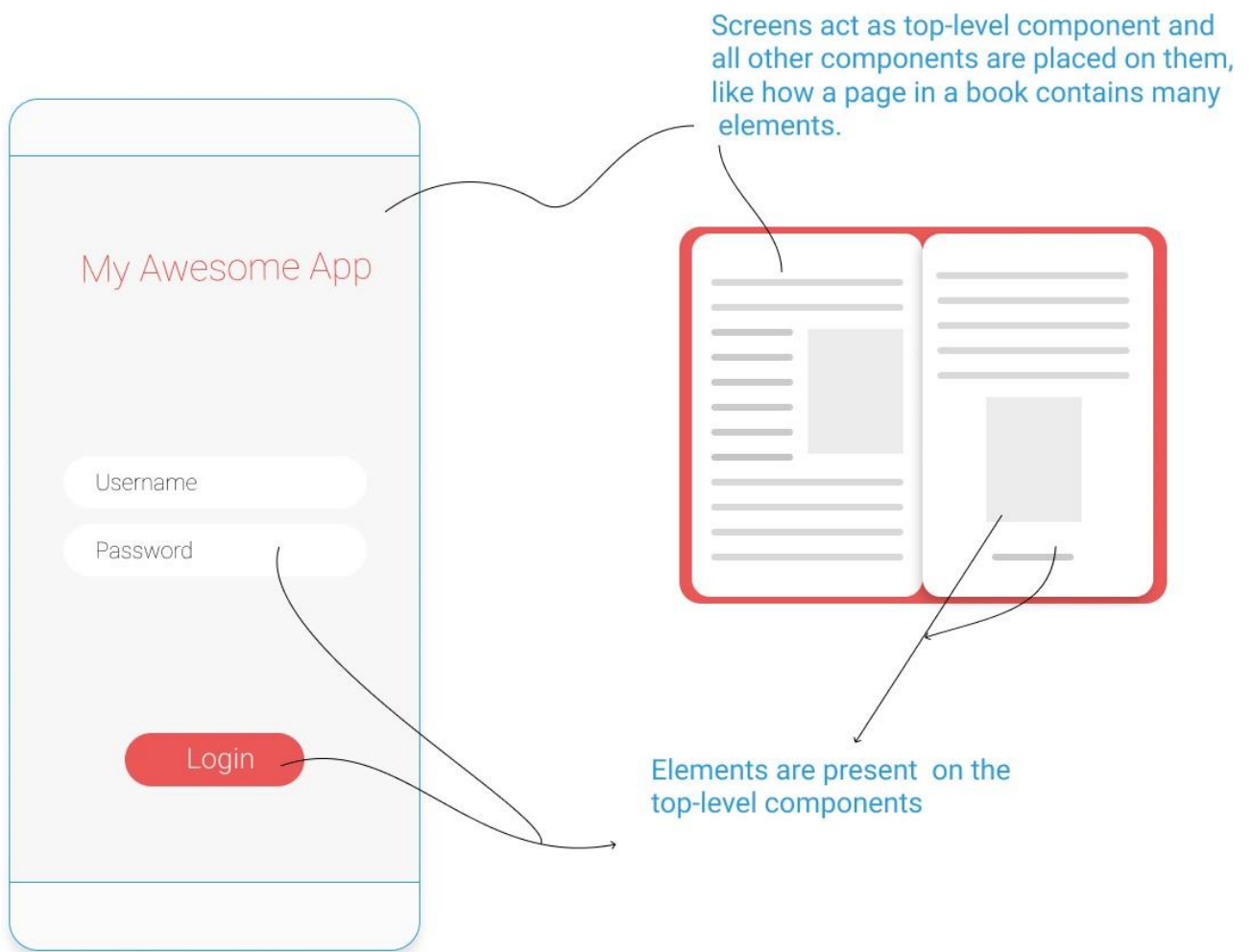
4.2 Components:

For easier access of components, they are grouped into various categories.

- 4.2.1 Screen
- 4.2.2 User Interface
- 4.2.3 Layout
- 4.2.4 Media
- 4.2.5 Drawing and Animation
- 4.2.6 Maps
- 4.2.7 Sensors
- 4.2.8 Social
- 4.2.9 Storage
- 4.2.10 Utilities
- 4.2.11 Dynamic Components
- 4.2.12 Connectivity
- 4.2.13 Google

4.2.1 Screen:

Screen is the top-most component in any app. All the other components are placed on a Screen. If you take the app as a book, the Screens can be regarded as the pages of a book and the other components as the various elements present on a page of a book, text, images etc.



4.2.2 User Interface: It consists of various components

- **Button:** Button with the ability to detect clicks. Many aspects of its appearance can be changed, as well as whether it is clickable (Enabled), can be changed in the Designer or in the Blocks Editor.
- **Checkbox:** Checkbox that raises an event when the user clicks on it. There are many properties affecting its appearance that can be set in the Designer or Blocks Editor.
- **Circular Progress:** A visible component that indicates the progress of an operation using an animated loop.
- **Custom Progress:** A visible component that indicates the progress of an operation using a range of indeterminate animations.

- **Date Picker:** A button that, when clicked on, launches a popup dialog to allow the user to select a date.

- **Image:** Component for displaying images. The picture to display, and other aspects of the Image's appearance, can be specified in the Designer or in the Blocks Editor. You can also add gif images.

- **Label:** A Label displays a piece of text, which is specified through the Text property. Other properties, all of which can be set in the Designer or Blocks Editor, control the appearance and placement of the text.

- **List Picker:** A button that, when clicked on, displays a list of texts for the user to choose among. The texts can be specified through the Designer or Blocks Editor by setting the Elements From String property to their string-separated concatenation (for example, *choice 1, choice 2, choice 3*) or by setting the Elements property to a List in the Blocks editor. Setting property ShowFilterBar to true, will make the list searchable. Other properties affect the appearance of the button (TextAlignment, BackgroundColor, etc.) and whether it can be clicked on (Enabled).

- **Notifier:** The Notifier component displays alert dialogs, messages, and temporary alerts, and creates Android log entries through the following methods:

4.2.2 Show Message Dialog: displays a message which the user must dismiss by pressing a button.

4.2.3 Show Choose Dialog: displays a message two buttons to let the user choose one of two responses, for example, yes or no, after which the After Choosing event is raised.

4.2.4 Show Text Dialog: lets the user enter text in response to the message, after which the After Text Input event is raised.

4.2.5 Show Password Dialog: lets the user enter password in response to the message, after which the After Text Input event is raised.

4.2.6 Show Alert: displays a temporary alert that goes away by itself after a short time.

4.2.7 Show Progress Dialog: displays an alert with a loading spinner that cannot be dismissed by the user. It can only be dismissed by using the Dismiss Progress Dialog block.

4.2.8 Custom Message Dialog: New version to display dialogs with icon

and in full screen mode.

4.2.9

Custom Choose Dialog: New version to display choose dialogs with icon and in full screen mode.

4.2.10 Light Theme: To display the dialogs in a light or dark theme.

4.2.11 Show Light box: Displays a png or gif file from assets or from web url in a dialog.

4.2.12 Show Linear Progress: Shows a progress dialog with a horizontal progress bar.

4.2.13 Show Spinning Progress: Shows a spinning progress dialog.

4.2.14 Update Progress: Change the current value of the linear progress dialog.

4.2.15 Show Radio List Dialog: Shows a radio list dialog with a list of options.

4.2.16 Show Check box List Dialog: Shows a picker dialog with a list of options.

4.2.17 Show List Picker: Shows a list picker dialog.

4.2.18 Show Text Input Dialog: Show a text input dialog.

4.2.19 Show Image Dialog: Show a image dialog. Animation types like `"*.gif"` are not supported.

4.2.20 Show Number Picker: Shows a number picker dialog that enables the user to select a number from a predefined range.

4.2.21 Show Word Picker: Shows a word picker dialog that enables the user to select a number from a predefined word.

4.2.22 Dismiss Progress Dialog: Dismisses the progress dialog displayed by Show Progress Dialog.

4.2.23 Dismiss Spinning Progress: Dismisses the progress dialog displayed by Show Spinning Progress.

4.2.24 Dismiss Linear Progress: Dismisses the progress dialog displayed by Show Linear Progress.

4.2.25 Log Error: logs an error message to the Android log.

4.2.26 Log Info: logs an info message to the Android log.

4.2.27 Log Warning: logs a warning message to the Android log.

4.2.28 The messages in the dialogs can be formatted using the following HTML tags: ``, `<big>`, `<blockquote>`, `
`, `<cite>`, `<dfn>`, `<div>`, ``, `<small>`, ``, `<sub>`, `<sup>`, `<tt>`. `<u>`

4.2.29 You can also use the font tag to specify color, for example, `<font`

color="blue">. Some of the available color names are aqua, black, blue, fuchsia, green, grey, lime, maroon, navy, olive, purple, red, silver, teal, white, and yellow.

- **Switch:** A visible component that lets the user toggle between two states — on and off.
- **Text Box:** A box for the user to enter text. The initial or user- entered text value is in the Text property. If blank, the Hint property, which appears as faint text in the box, can provide the user with guidance as to what to type.

The Multi Line property determines if the text can have more than one line. For a single line text box, the keyboard will close automatically when the user presses the Done key. To close the keyboard for multiline text boxes, the app should use the Hide Keyboard method or rely on the user to press the Back key. The Numbers Only property restricts the keyboard to accept numeric input only. Other properties affect the appearance of the text box (TextAlignment, BackgroundColor, etc.) and whether it can be used (Enabled). Text boxes are usually used with the Button component, with the user clicking on the button when text entry is complete. If the text entered by the user should not be displayed, use Password TextBox instead.
- **Time Picker:** A button that, when clicked on, launches a popup dialog to allow the user to select a time.

4.2.3 Layout:

1. **Horizontal Arrangement:** A formatting element in which to place components that should be displayed from left to right. If you wish to have components displayed one over another, use Vertical Arrangement instead.
2. **Space:** A visible component that creates spaces between components.
3. **Vertical Arrangement:** A formatting element in which to place components that should be displayed one below another. (The first child component is stored on top, the second beneath it, etc.) If you wish to have components displayed next to one another, use Horizontal Arrangement .

4.2.4 Media:

1. **Audio Picker:** A special-purpose button. When the user taps an audio picker, the device's audio gallery appears, and the user can choose an audio file.
2. **Camera:** A component to take a picture using the device's camera. After the picture is taken, the name of the file on the phone containing the picture

is available as an argument to the After Picture event. The file name can be used, for example, to set the Picture property of an Image component.

3. Image Picker: A special-purpose button. When the user taps an image picker, the device's image gallery appears, and the user can choose an image.

4. QR Code: A non-visible component that generates a QR code from text

4.2.5 Drawing and Animation:

1. Canvas: A two-dimensional touch-sensitive rectangular panel on which drawing can be done and sprites can be moved.

The Back ground Color, Paint Color, Back ground Image, Width, and Height of the Canvas can be set in either the Designer or in the Blocks Editor. The Width and Height are measured in pixels and must be positive. Any location on the Canvas can be specified as a pair of (X, Y) values, where

- X is the number of pixels away from the left edge of the Canvas
- Y is the number of pixels away from the top edge of the Canvas
- There are events to tell when and where a Canvas has been touched or a Sprite (ImageSprite or Ball) has been dragged. There are also methods for drawing points, lines, and circles.

4.2.7 Sensors:

1. Barcode Scanner: A non-visible component that reads barcodes from the device's camera.

2. Clock: Non-visible component that provides the instant in time using the internal clock on the phone. It can fire a timer at regularly set intervals and perform time calculations, manipulations, and conversions. Methods to convert an instant to text are also available. Acceptable patterns are empty string, MM/DD/YYYY HH:MM:ss a, or MMM d, yyyy:HH:mm. The empty string will provide the default format, which is "MMM d, yyyy HH:MM:ss a" for Format Date Time "MMM d, yyyy" for Format Date.

3. Fingerprint: A non-visible component that reads fingerprints using the device's in-built fingerprint scanner.

4. Location Sensor: Non-visible component providing location

information, including longitude, latitude, altitude (if supported by the device), speed (if supported by the device), and address. This can also perform "geocoding", converting a given address (not necessarily the current one) to a latitude (with the Latitude From Address method) and a longitude (with the Longitude From Address method).

In order to function, the component must have its Enabled property set to True, and the device must have location sensing enabled through wireless networks or GPS satellites (if outdoors).

Location information might not be immediately available when an app starts. You'll have to wait a short time for a location provider to be found and used, or wait for the On Location Changed event

4.2.8 Social:

1. **Sharing:** Sharing is a non-visible component that enables sharing files and/or messages between your app and other apps installed on a device. The component will display a list of the installed apps that can handle the information provided, and will allow the user to choose one to share the content with, for instance a mail app, a social network app, a texting app, and so on.

The file path can be taken directly from other components such as the Camera or the Image Picker, but can also be specified directly to read from storage.

2. **Phone Call:** A non-visible component that makes a phone call to the number specified in the Phone Number property, which can be set either in the Designer or Blocks Editor. The component has a Make Phone Call method, enabling the program to launch a phone call. Often, this component is used with the Contact Picker component, which lets the user select a contact from the ones stored on the phone and sets the Phone Number property to the contact's phone number. To directly specify the phone number (e.g., 650-555-1212), set the Phone Number property to a Text with the specified digits (e.g., "6505551212"). Dashes, dots, and parentheses may be included (e.g., "(650)-555-1212") but will be ignored; spaces may not be included.

4.2.8 Storage:

1. **Tiny DB:** TinyDB is a non-visible component that stores data for an app. Apps created with App Inventor are initialized each time they run: If an app

sets the value of a variable and the user then quits the app, the value of that variable will not be remembered the next time the app is run. In contrast, TinyDB is a *_persistent_* data store for the app, that is, the data stored there will be available each time the app is run. An example might be a game that saves the high score and retrieves it each time the game is played. Data items are strings stored under *tags*. To store a data item, you specify the tag it should be stored under. Subsequently, you can retrieve the data that was stored under a given tag.

There is only one data store per app. Even if you have multiple TinyDB components, they will use the same data store. To get the effect of separate stores, use different keys. Also each app has its own data store. You cannot use TinyDB to pass data between two different apps on the phone, although you *can* use TinyDb to shares data between the different screens of a multi-screen app.

When you are developing apps using the AI Companion, all the apps using that companion will share the same TinyDB. That sharing will disappear once the apps are packaged. But, during development, you should be careful to clear the TinyDB each time you start working on a new app.

Tiny Web DB: A non-visible component that communicates with a web service to store and retrieve information.

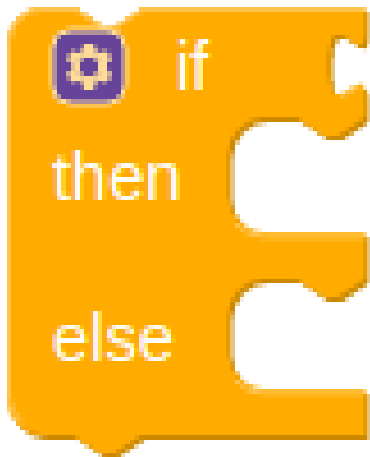
4.2.10 Connectivity:

1. **Download:** The Download component is a non-visible component that allows users to download any file to the device.
2. **Web:** A non-visible component that provides functions for HTTP GET, POST, PUT, and DELETE requests.

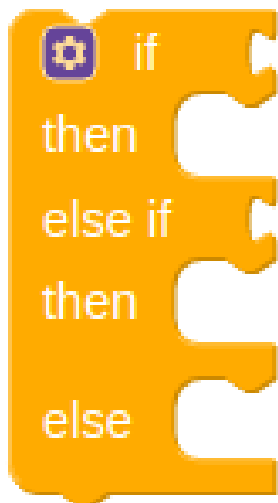
4.3 Blocks:

Control:

1. **if & if else:** Tests a given condition. If the condition is true, performs the actions in a given sequence of blocks; otherwise, the blocks are ignored.

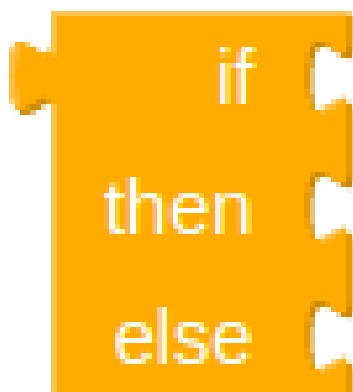


Tests a given condition. If the result is true, performs the actions in the - do sequence of blocks; otherwise, performs the actions in the -else sequence of blocks.



Tests a given condition. If the result is true, performs the actions in the - do sequence of blocks; otherwise tests the statement in the -else if section. If the result is true, performs the actions in the -do sequence of blocks; otherwise, performs the actions in the -else sequence of blocks.

2. if then else:



Tests a given condition. If the statement is true, performs the actions in the then-return sequence of blocks and returns the then-return value;
otherwise, performs the actions in the else-return sequence of blocks and returns the else-return value.

3. do:



Sometimes in a procedure or another block of code, you may need to do something and return something, but for various reasons you may choose to use this block instead of creating a new procedure.

4. While:



Tests the -test condition. If true, performs the action given in -do , then tests again. When test is false, the block ends and the action given in -do is no longer performed.

5. open another screen:



Opens the screen with the provided name.

6. close screen:



Closes the current screen.

7. close application:



Closes the application.

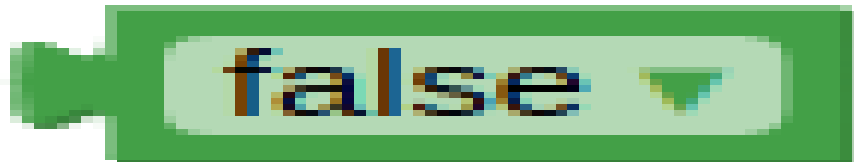
Logic

1. true:



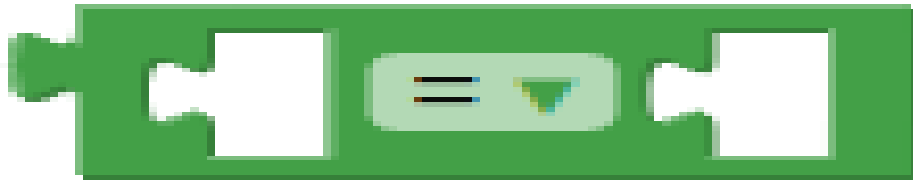
Represents the constant value true. Use it for setting boolean property values of components, or as the value of a variable that represents a condition.

2. false:



Represents the constant value false. Use it for setting boolean property values of components, or as the value of a variable that represents a condition.

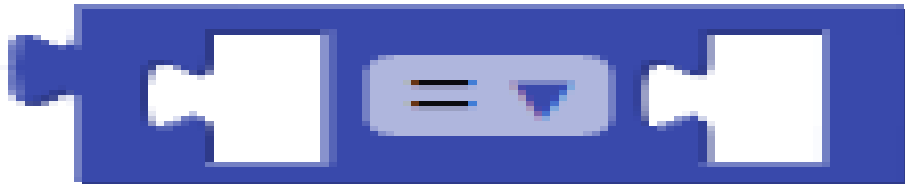
3.equal =:



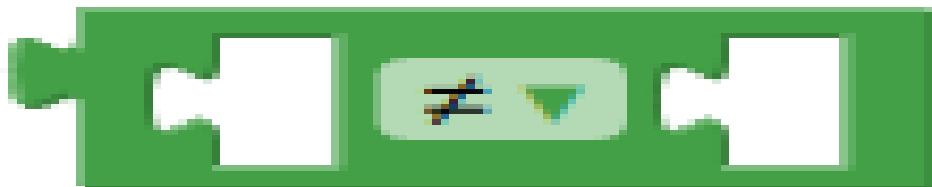
Tests whether its arguments are equal:

- 4.3.8 Two numbers are equal if they are numerically equal, for example, 1 is equal to 1.0.
- 4.3.9 Two text blocks are equal if they have the same characters in the same order, with the same case. For example, "banana" `_**_` is not equal to "Banana".
- 4.3.10 Numbers and text are equal if the number is numerically equal to a number that would be printed with that text. For example, 12.0 is equal to the result of joining the first character of "1A" to the last character of "Teafor2".
- 4.3.11 Two lists are equal if they have the same number of elements and the corresponding elements are equal.

It acts exactly the same as the = block found in Math



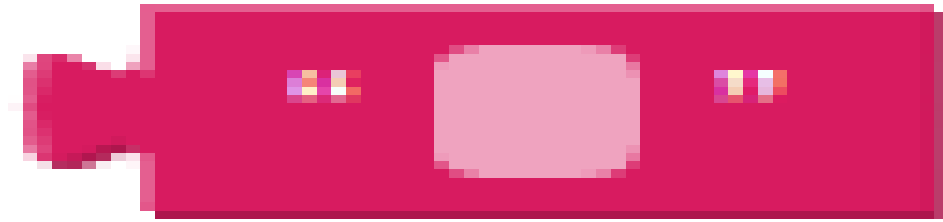
3. not equal ≠:



Tests to see whether two arguments are not equal.

4.3.11.1 Text

1. string:



Contains a text string.

This string can contain any characters (letters, numbers, or other special characters). On Kodular, it will be considered a Text object.

2. join:



Appends all of the inputs to make a single string. If no inputs, returns an empty string.

3. is empty:



Returns whether or not the string contains any characters (including spaces). When the string length is 0, returns true otherwise it returns false.

4. length:



Returns the number of characters including spaces in the string. This is the length of the given text string.

Variables:

1. initialize global name to: This block is used to create global variables. It takes in any type of value as an argument. Clicking on `_name_` will change the name of this global variable. Global variables are used in all procedures or events so this block will stand alone.

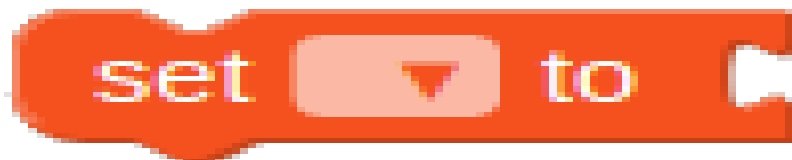
Global variables can be changed while an app is running and can be referred to and changed from any part of the app even within procedures and event handlers. You can rename this block at any time and any associated blocks referring to the old name will be updated automatically.



2. get: This block provides a way to get any variables you may have created.



3. set to: This block follows the same rules as get. Only variables in scope will be available in the dropdown. Once a variable var is selected, the user can attach a new block and give var a new value.



4. initialize local name to in (do): This block is a mutator that allows you to create new variables that are only used in the procedure you run in the DO part of the block. This way all variables in this procedure will all start with the same value each time the procedure is run.

NOTE: This block differs from the block described below because it is a DO block. You can attach *statements* to it. Statements *do* things. That is why this block has space inside for statement blocks to be attached.

You can rename the variables in this block at any time and any corresponding blocks elsewhere in your program that refer to the old name will be updated automatically



4.4 Data types:

Asset: An Asset type property can be set from the Designer by selecting an Asset from the uploaded assets for the app. From the Blocks Editor, it can be set using a [Text](#) block containing the path to that Asset.

Color: A Color found under the Color category.

Number: A Designer property of this type can be set by filling a number in the textbox. From the blocks editor, the Number block can be found under the Math category.

Text: A Text is simply a string. It can have alphanumeric characters. For some properties and parameters, certain pre-determined Text are only allowed, which would be documented with them.

4.5 Xampp Server: XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends,^[2] consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible.

Features: XAMPP is regularly updated to the latest releases of Apache, MariaDB, PHP and Perl. It also comes with a number of other modules including Open SSL, phpMyAdmin, MediaWiki, Joomla, WordPress and more. Self-contained, multiple instances of XAMPP can exist on a single computer, and any given instance can be copied from one computer to another. XAMPP is offered in both a full and a standard version (Smaller version).

Usage: The most obvious characteristic of XAMPP is the ease at which a WAMP web server stack can be deployed and instantiated. Later some common packaged applications that could be easily installed were provided by Bitnami.

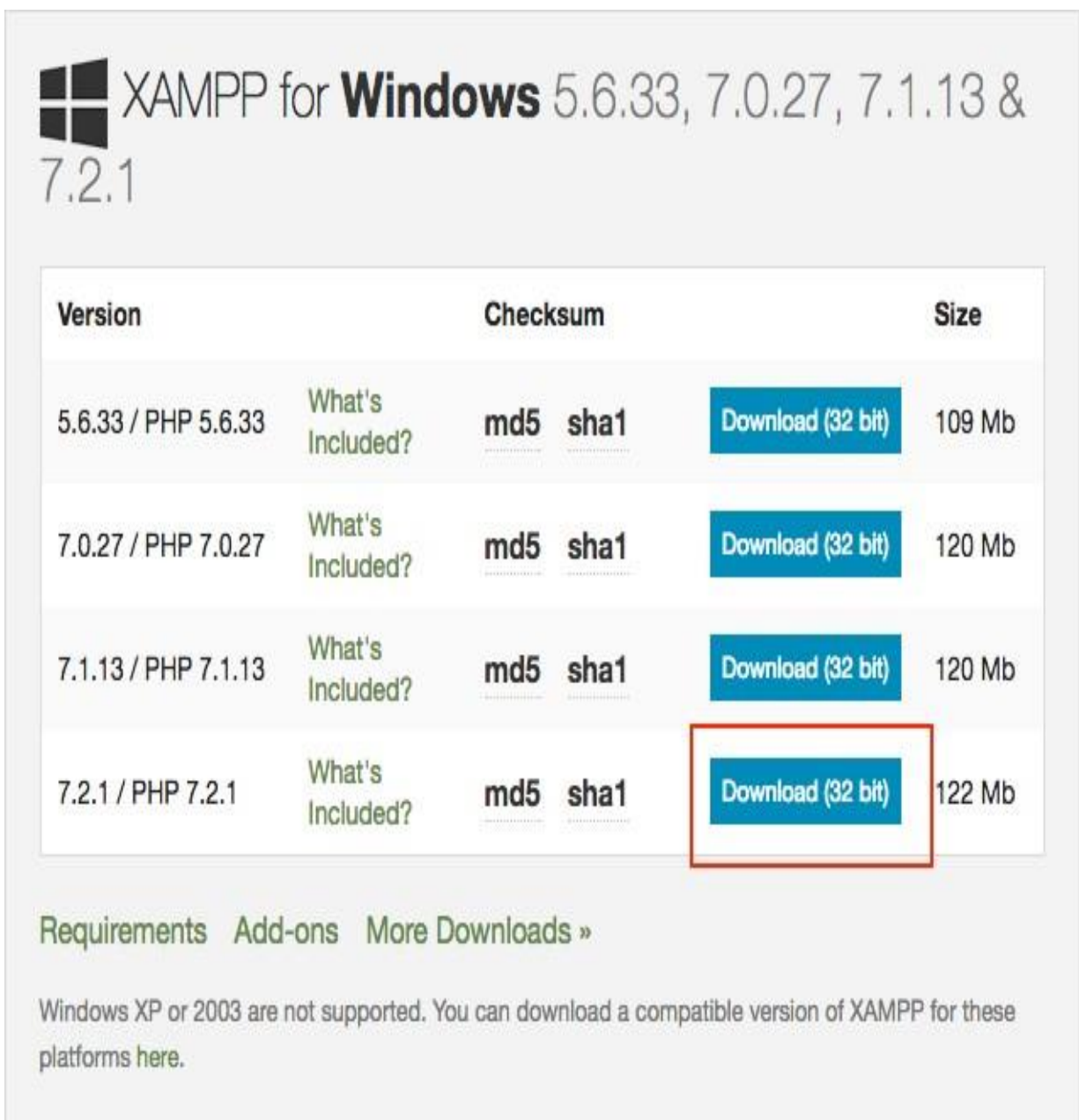
Officially, XAMPP's designers intended it for use only as a development tool, to allow website designers and programmers to test their work on their

own computers without any access to the Internet. To make this as easy as possible, many important security features are disabled by default. XAMPP has the ability to serve web pages on the World Wide Web. A special tool is provided to password-protect the most important parts of the package.

XAMPP also provides support for creating and manipulating databases in MariaDB and SQLite among others.

4.5.1 How to install ?

Download: Navigate to the [XAMPP website](#) and download XAMPP installer with PHP7



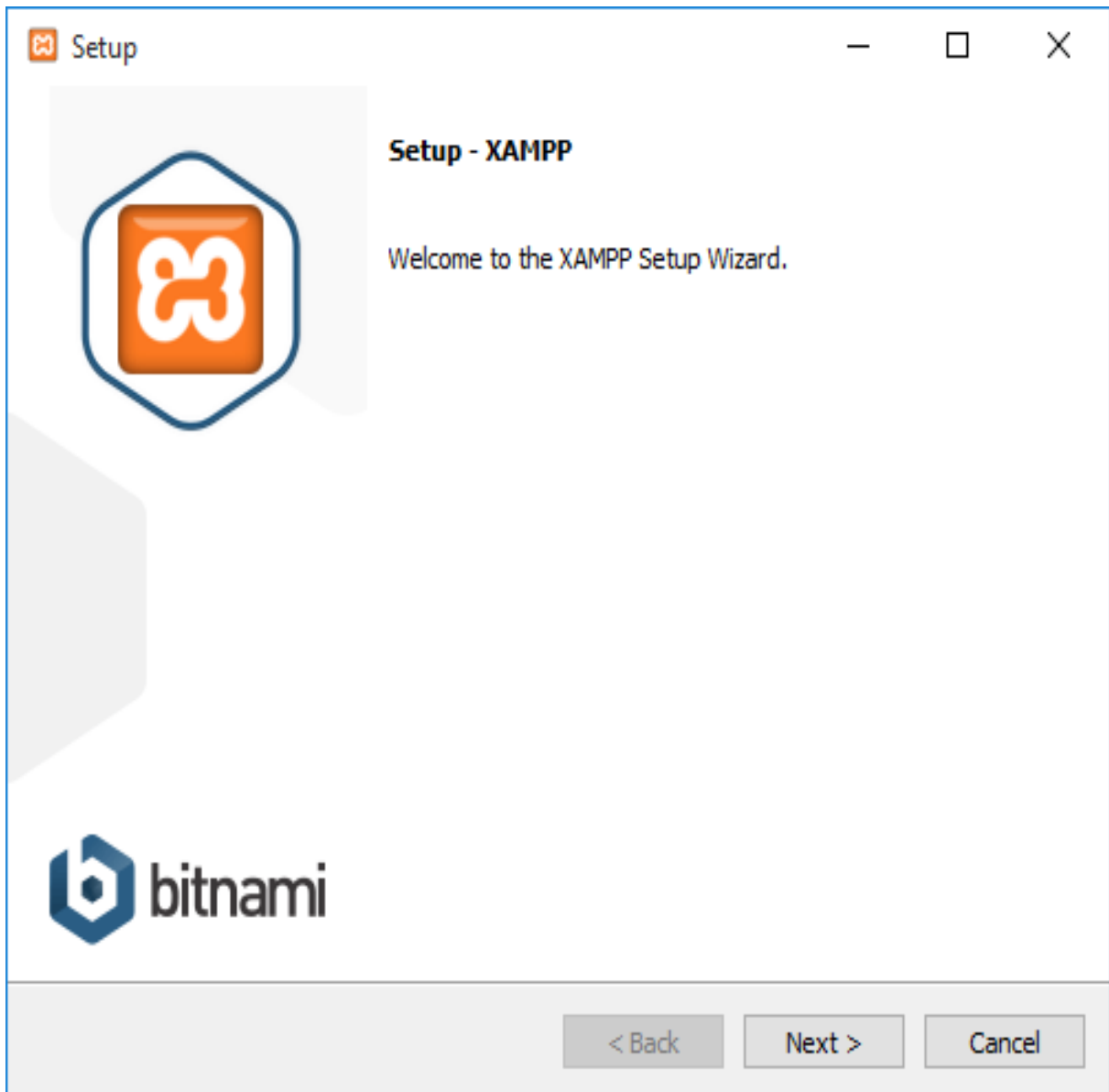
XAMPP for **Windows** 5.6.33, 7.0.27, 7.1.13 & 7.2.1

Version	Checksum	Size
5.6.33 / PHP 5.6.33 What's Included?	md5 sha1	Download (32 bit) 109 Mb
7.0.27 / PHP 7.0.27 What's Included?	md5 sha1	Download (32 bit) 120 Mb
7.1.13 / PHP 7.1.13 What's Included?	md5 sha1	Download (32 bit) 120 Mb
7.2.1 / PHP 7.2.1 What's Included?	md5 sha1	Download (32 bit) 122 Mb

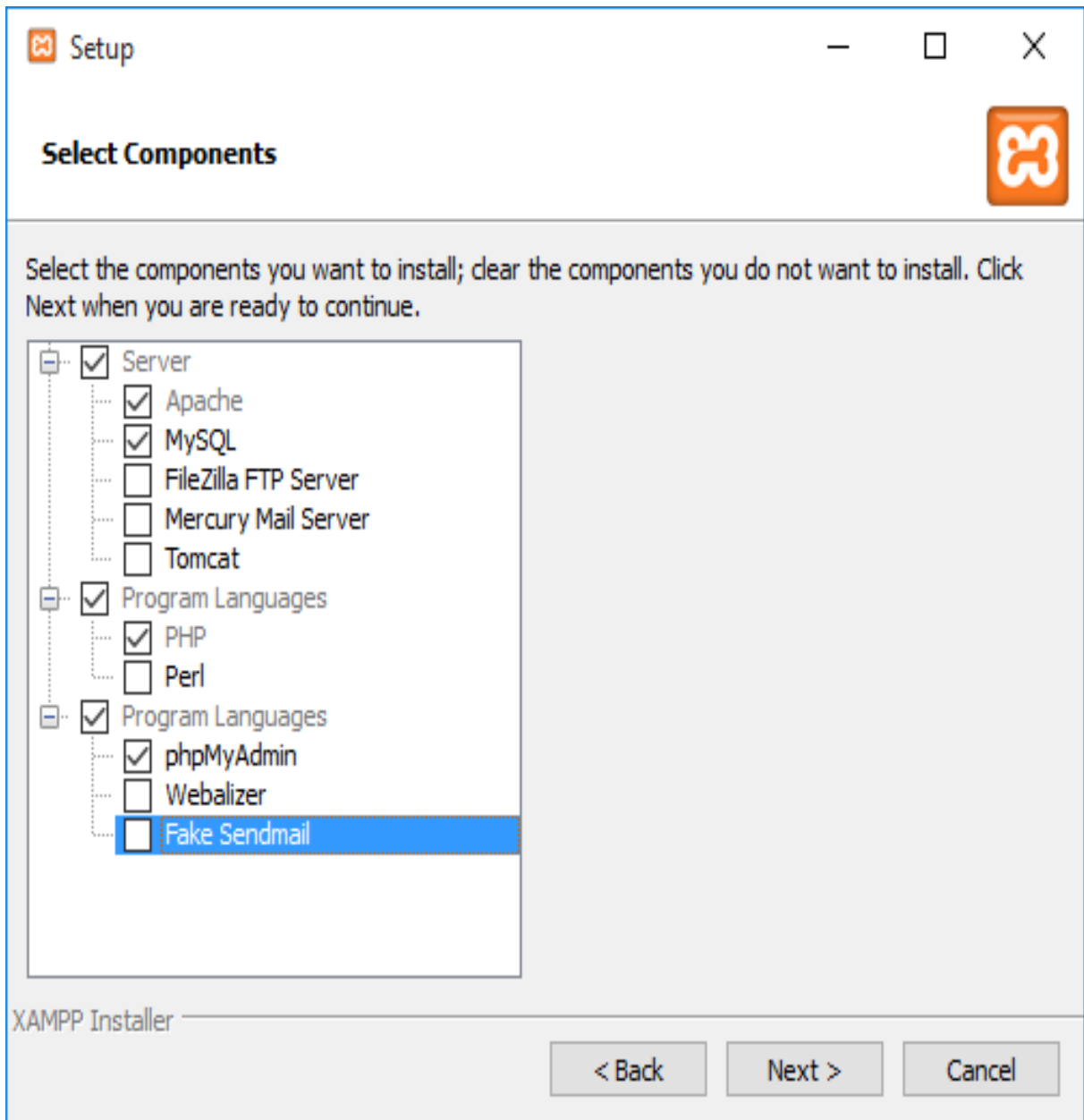
[Requirements](#) [Add-ons](#) [More Downloads »](#)

Windows XP or 2003 are not supported. You can download a compatible version of XAMPP for these platforms [here](#).

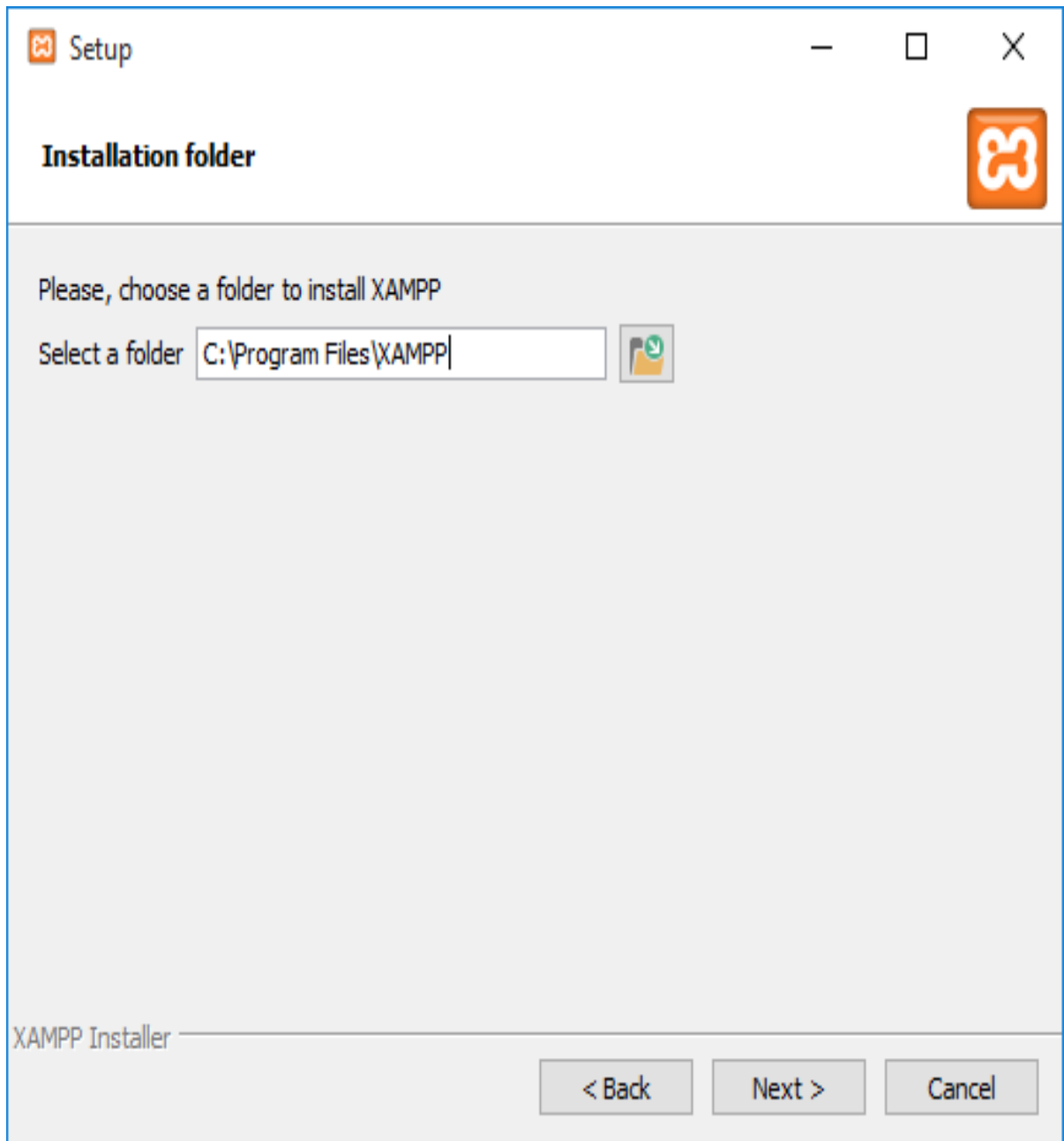
Install:



Now you can decide which components you wish to install. Since we want to run WordPress in our local host environment, we have to leave the MySQL and phpMyAdmin options checked. You can either uncheck the remaining options or keep the default settings (recommended). Then click Next.

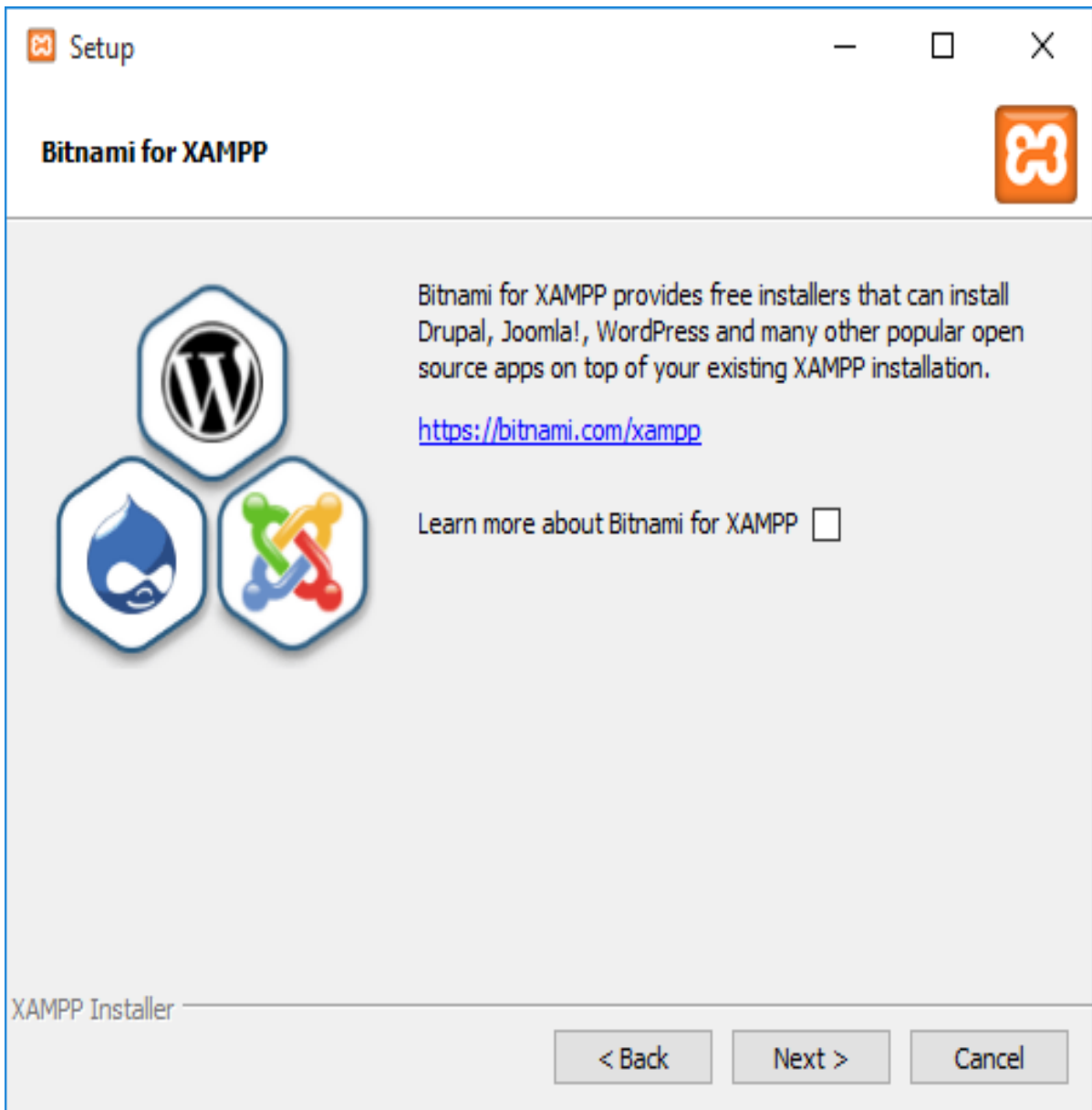


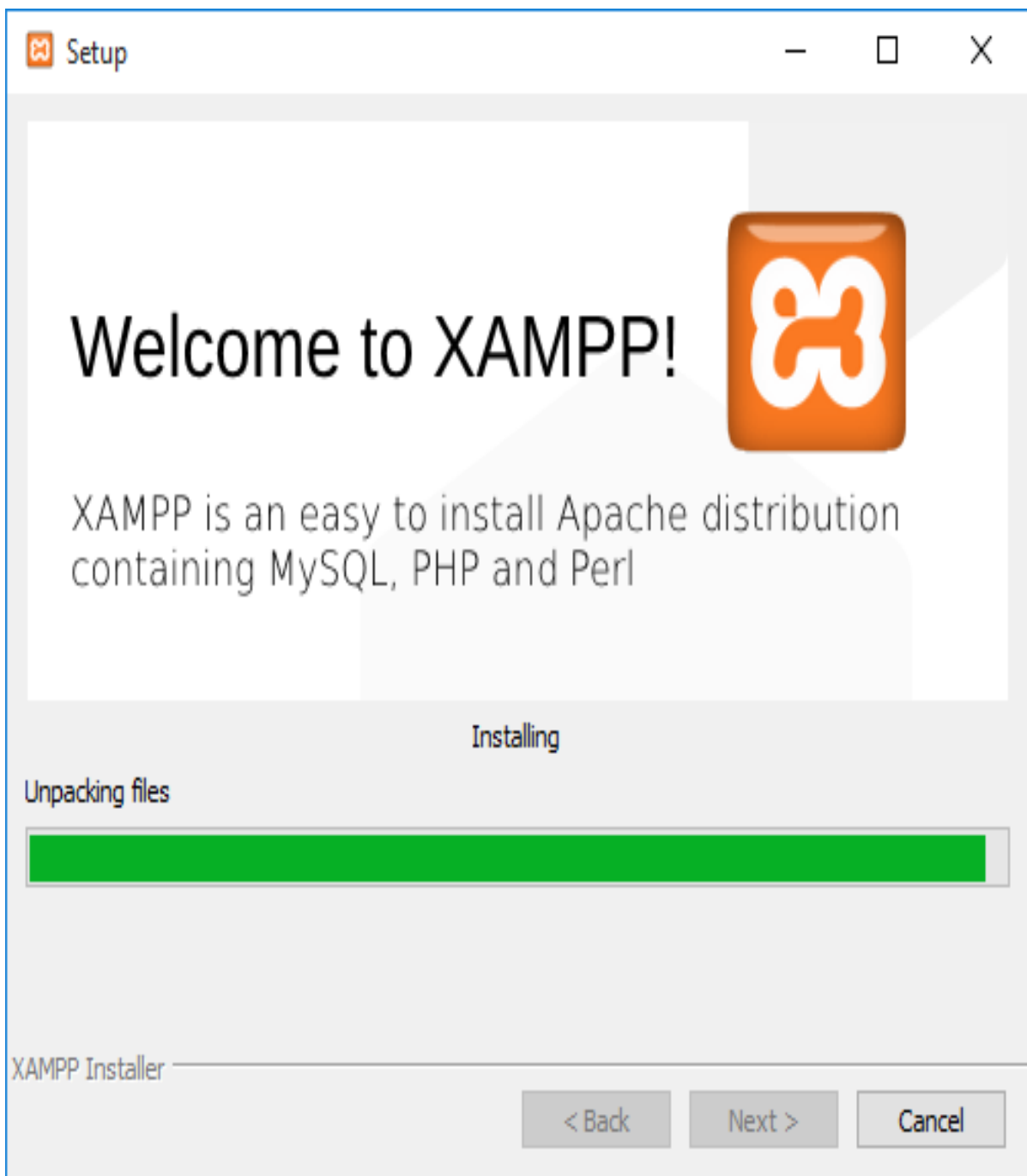
You can now decide where you would like to install XAMPP on your machine. Choose that existing folder (i.e.) C:\Program Files\XAMPP (recommended) or leave as default. Click Next.



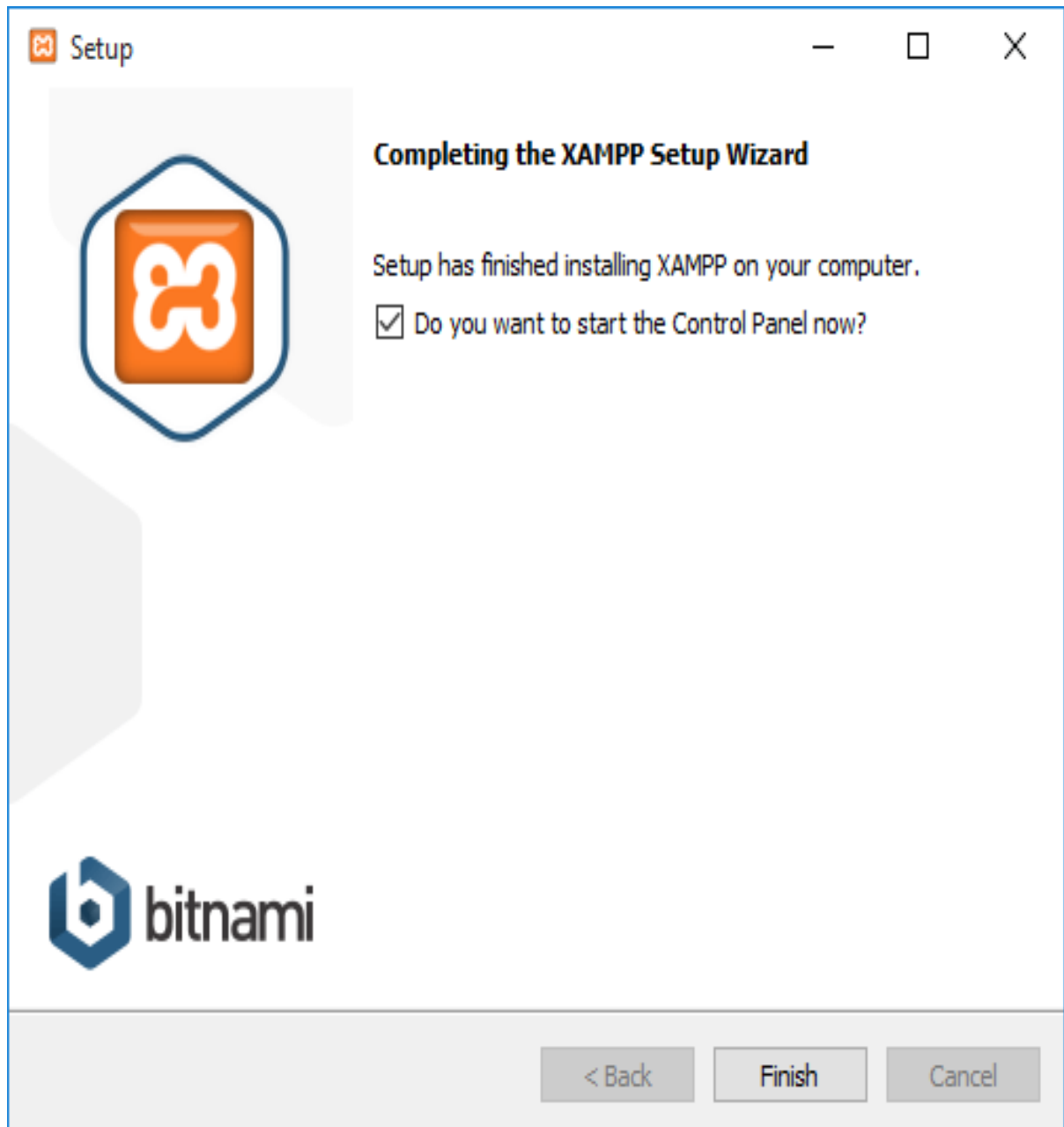
In the next window, you'll be asked to install Bitnami for XAMPP, **uncheck that option**, then click Next.

The installer will install XAMPP:

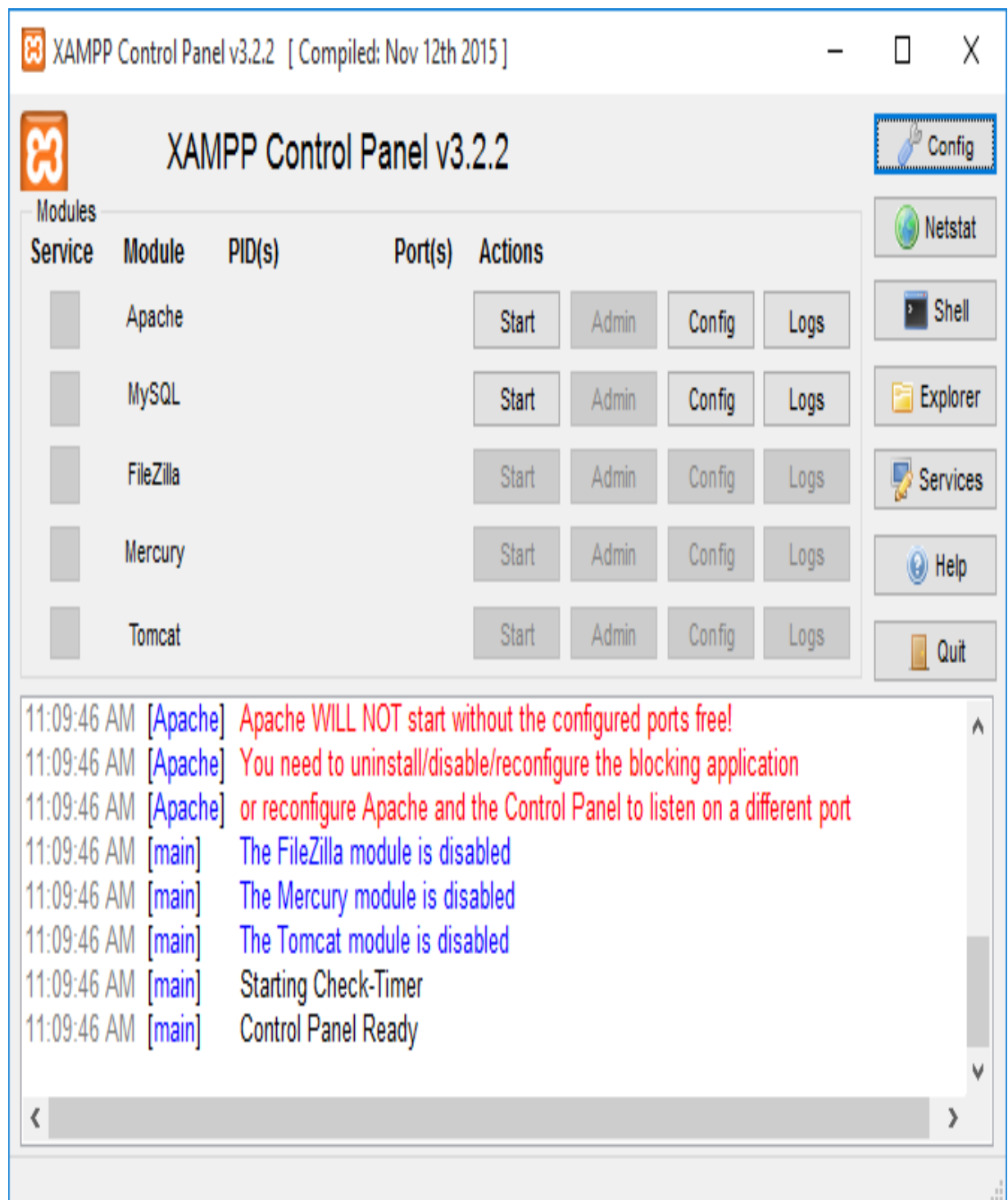




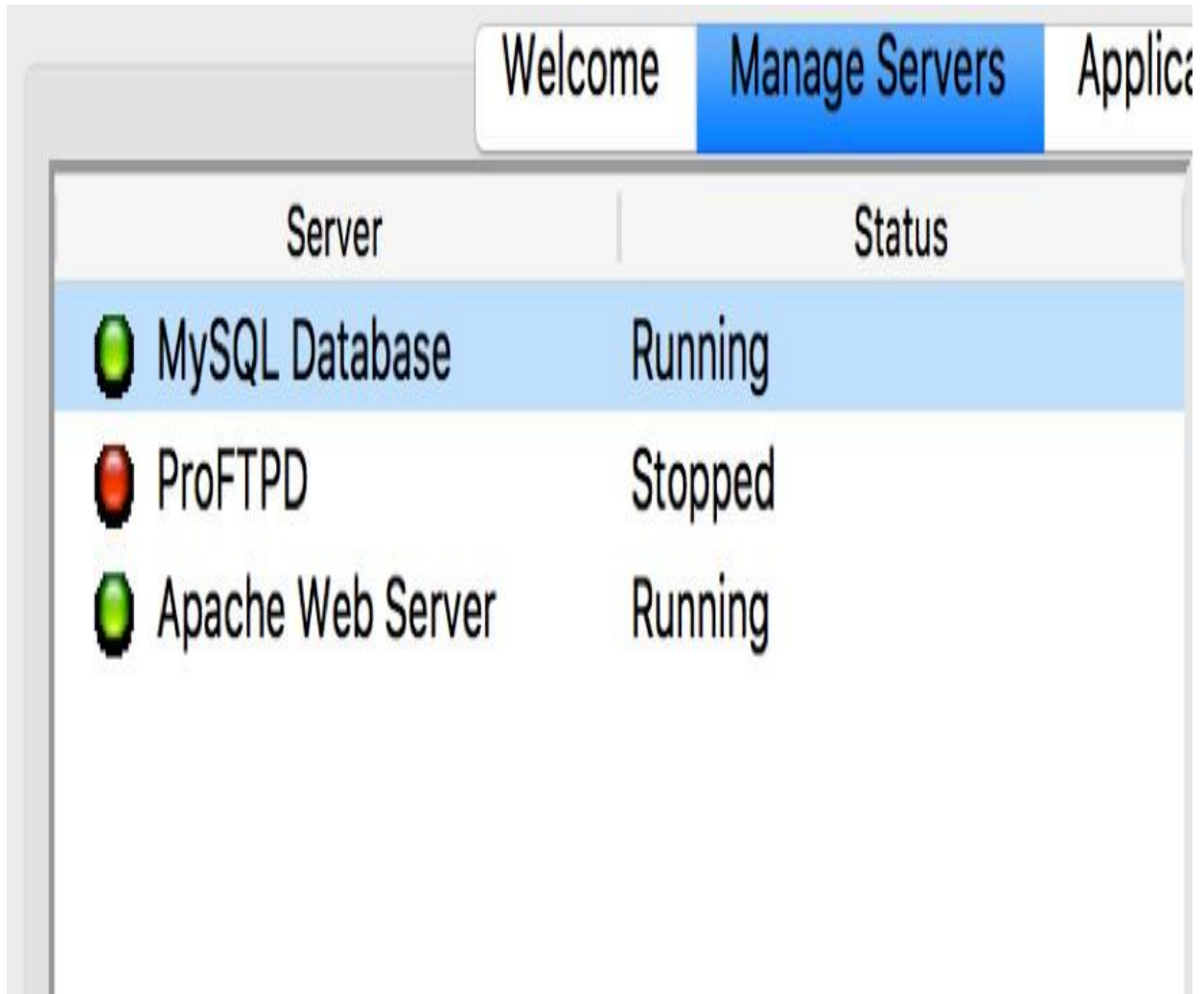
Run: Once the installation is finished you will see the final screen. Check the option *Do you want to start the Control Panel now?*. Then click Finish.



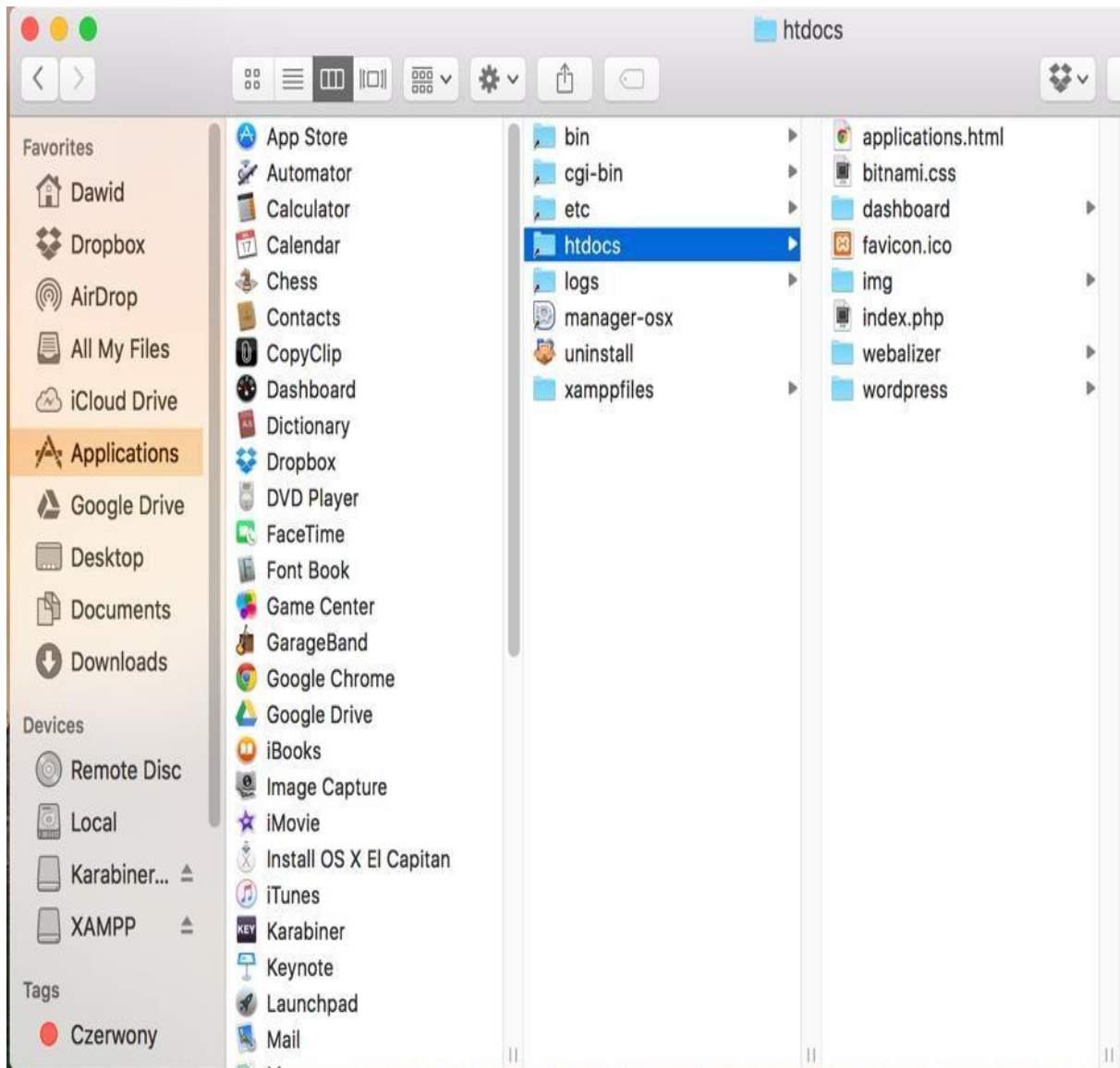
This will open the XAMPP Control Panel:



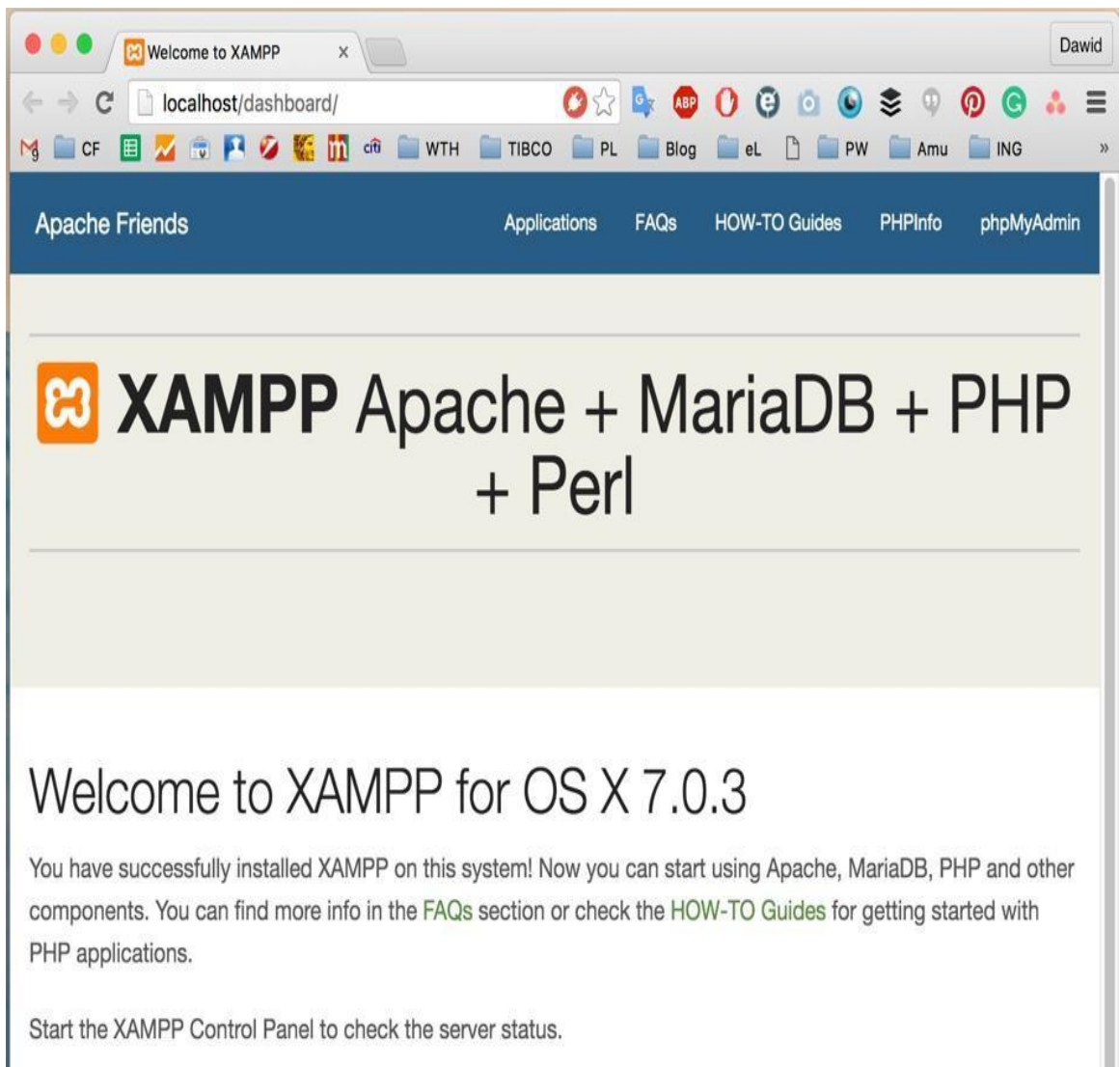
Test: Go to the “Manage Servers” tab and make sure that you have both Apache Web Server and MySQL Database running. If not — start them manually from the tab.



Come back to the Welcome tab and click on “Open Application Folder”. This will open the folder where XAMPP was installed. What is the most interesting for us is a the htdocs folder which is the root folder of our web server.



Notice that there are already existing folders like the dashboard. Come back to XAMPP and click on the “Go to application” button. This will open the URL <http://localhost/dashboard/> website in your web browser. You will see the XAMPP welcome page. Congratulations! If that works correctly that means that you have managed to setup your own webserver.



5. METHODOLOGY OF PROJECT

5.1 Project Description: In each period teacher will generate a QR code and every student had to scan the QR code with their mobile with the help of android application and after that student will enter their details like Year, Section, Roll no. in the page which appeared after scan process. After entering their details and this data is stored in the database and absentee list also appeared by comparing data of given students with the static data of given students, so that faculty can take down the list of Absentees in an efficient manner.

Algorithm:

Step 1: Install Attendance Marker Application in your Mobile.

Step 2: Open the Application.

Step 3: Press — Scan for students — button in the application.

Step 4: Wait for the Progress bar to fill i.e, Scan for QR code which is generated by the teacher.

Step 5: After scanning is over, You will be taken to next Activity where students have to fill their details to get their attendance marked.

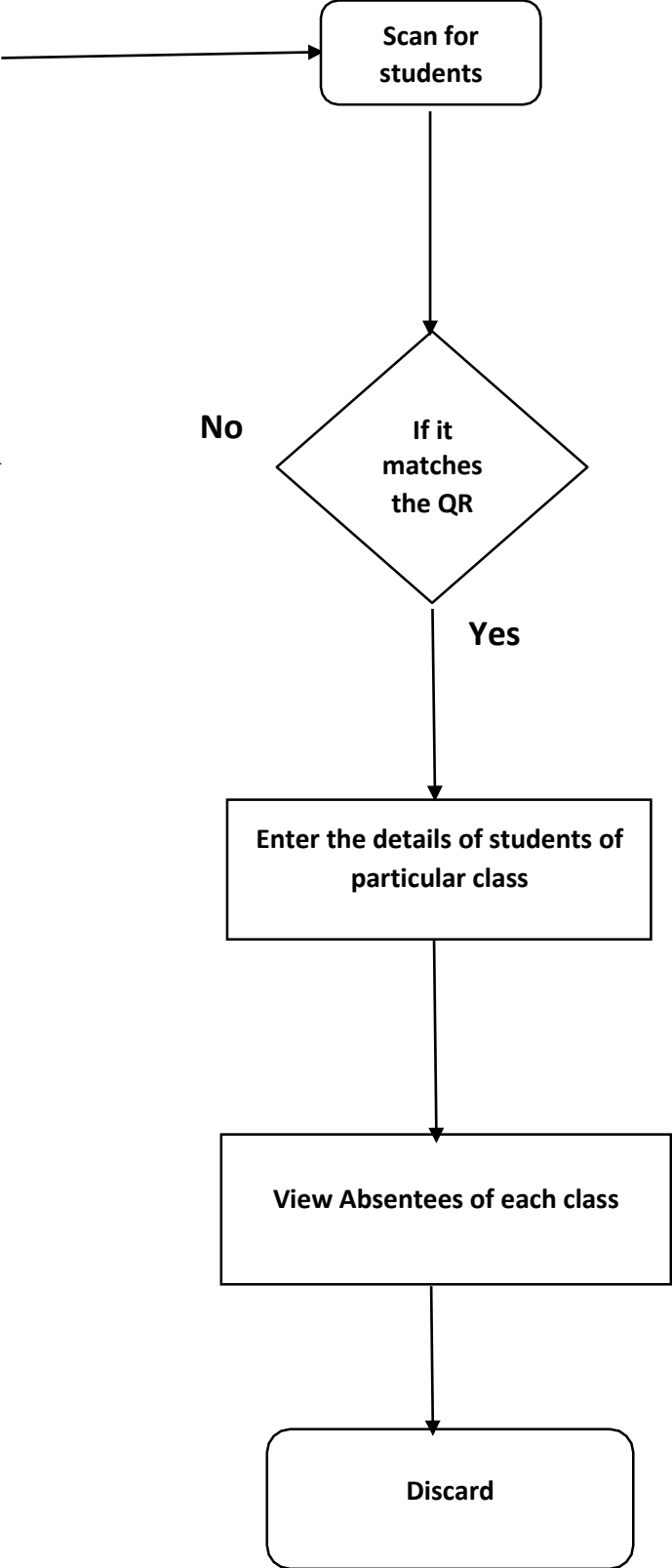
Step 6: Press — View Absentees || button to view the list of Absentees of the class.

Step 7: Enter the particular students Year, Sec and roll number in the fields and Press — Add || button to add the particular student data.

Step 8: Press — Select subject — button to enter the data of students of the particular class.

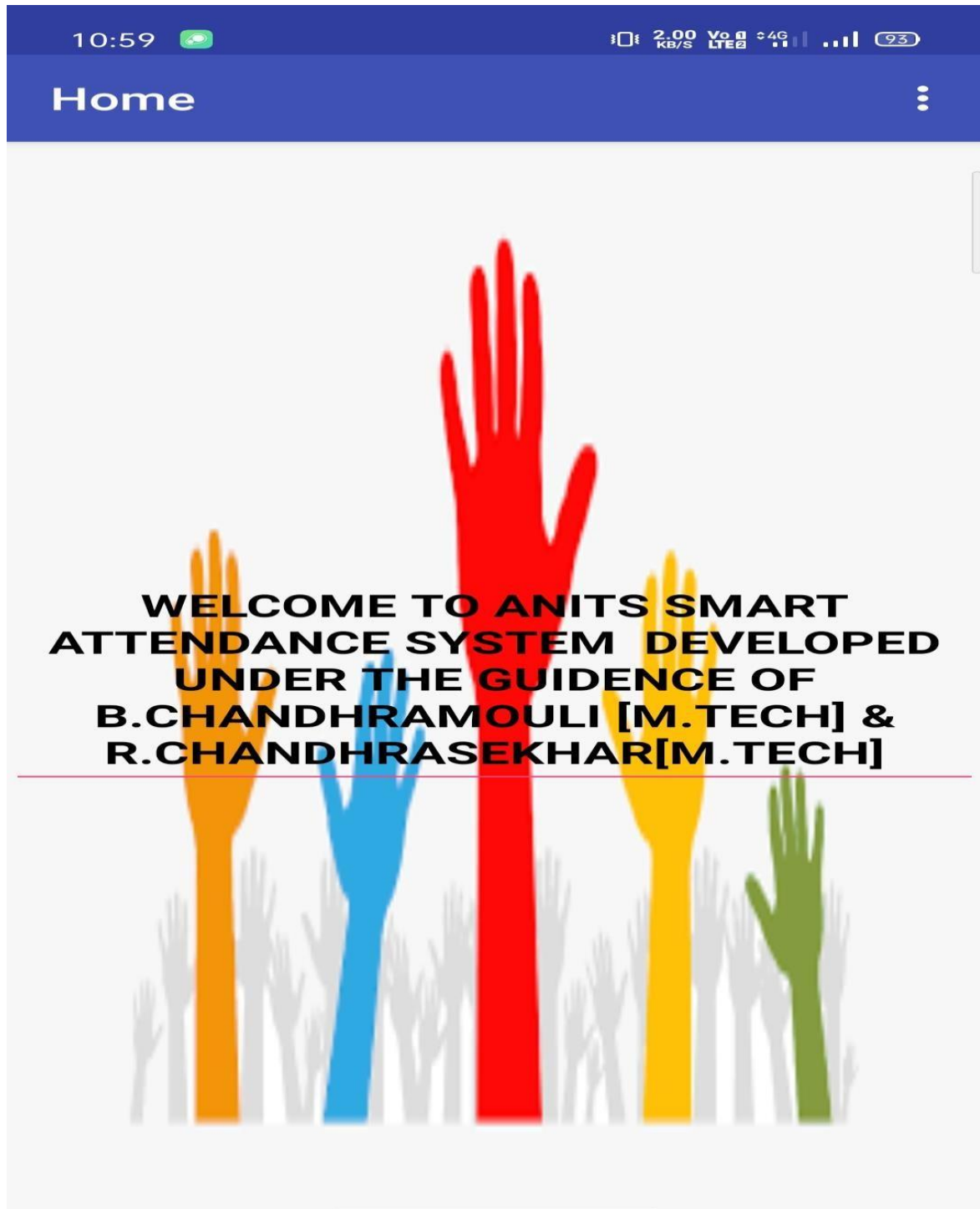
Step 9: Enter the Students data such as Year, Sec and roll number in the fields and Press — Add || button to add the data of the Particular roll number associated student's data into the particular subject database.

Flowchart:



6. RESULTS AND DISCUSSION

- When the app is opened



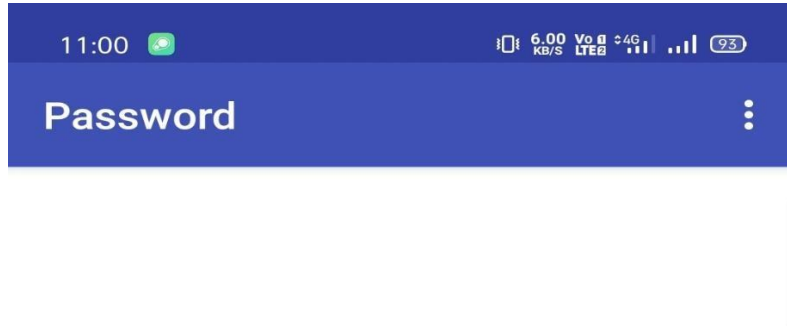


Qr generator

Student

View Attendance

- If we select QR generator button it asked to enter the passcode and if it matches then it will a page where we can generate QR.



Enter passcode

Enter

11:02

2.00 KB/S VoLTE 4G 92

QR Generator

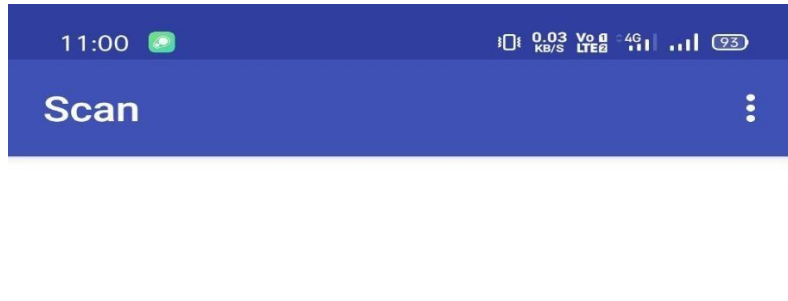


12345

Generate QR code

[http://api.qrserver.com/v1/create-qr-code/?data=12345
&color=000000&bgcolor=ffffff&margin=0&format=png&
size=200x200](http://api.qrserver.com/v1/create-qr-code/?data=12345&color=000000&bgcolor=ffffff&margin=0&format=png&size=200x200)

- After QR is generated by the teacher students have to scan that QR by clicking the student button and then we can see scan button.



- After completion of scanning then students have to enter their details

11:02

0.29 KB/S Vo LTE 4G 92

Add Details

Select Subject

scgps

Year

4

Section

c

Rollno

316126512174

ADD

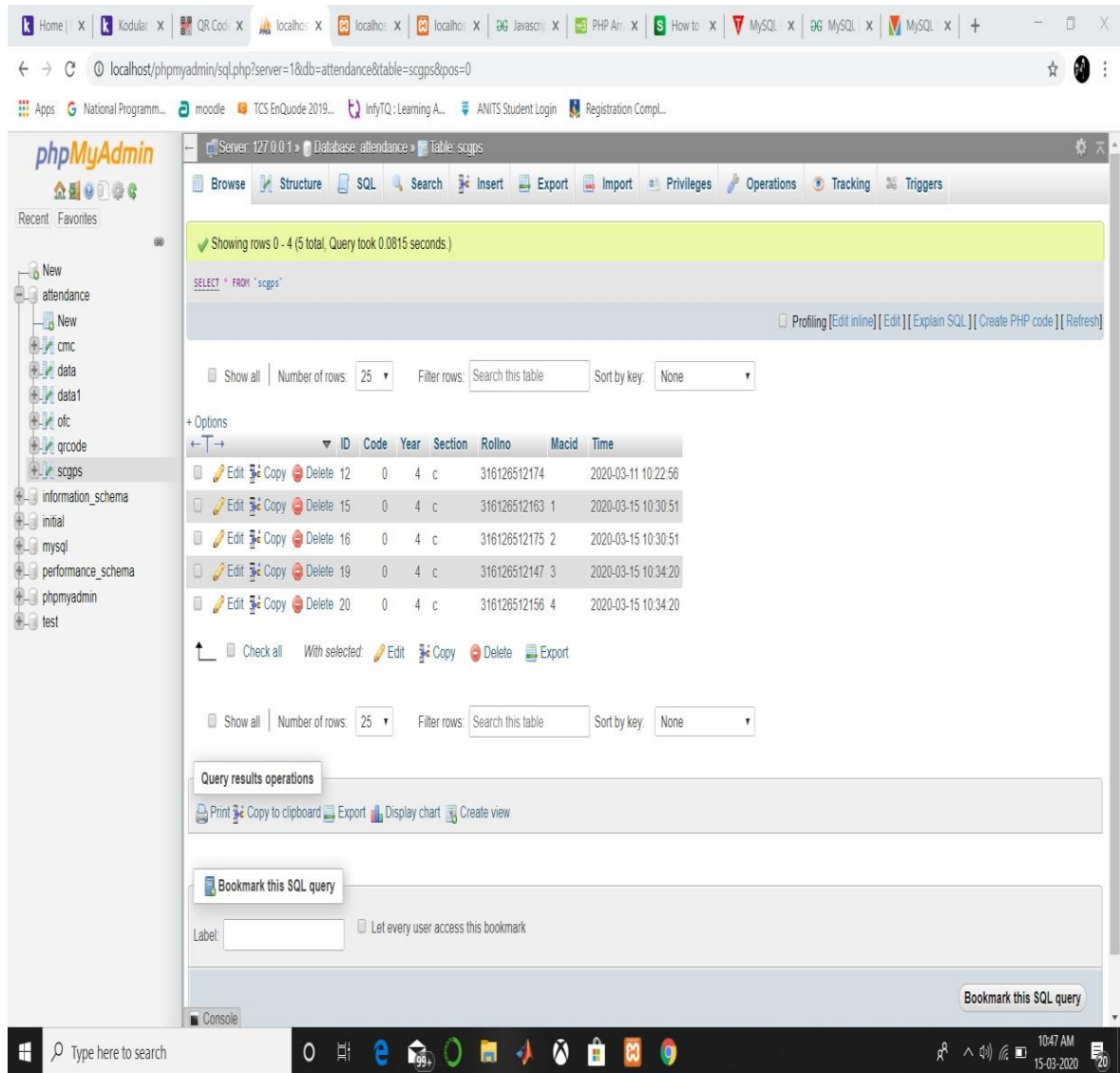
- Already we had stored the data of total students of entire class in the database.

The screenshot shows the phpMyAdmin interface for a database named 'attendance'. The table 'data' is selected, and the following SQL query is executed: `SELECT * FROM 'data'`. The query results show 8 rows of data, each representing a student's attendance record. The columns are ID, Code, Year, Section, Rollno, MacId, and Time. The data is as follows:

ID	Code	Year	Section	Rollno	MacId	Time
79		4	c	318126512174	1	2020-03-14 22:06:30
80		4	c	318126512175		2020-03-14 22:06:30
83		4	c	318126512163	2	2020-03-14 22:07:56
84		4	c	318126512156	3	2020-03-14 22:07:56
85		4	c	318126512160	4	2020-03-14 22:09:21
86		4	c	318126512152	5	2020-03-14 22:09:21
87		4	c	318126512146	6	2020-03-14 22:12:17
88		4	c	318126512147	7	2020-03-14 22:12:17

The interface also shows options for filtering and sorting the data, and a 'Query results operations' section with buttons for Print, Copy to clipboard, Export, Display chart, and Create view. The system tray at the bottom shows the date and time as 10:40 AM on 15-03-2020.

- Here we can select the subject of their respective class and we can add the details to each subject database and we can also check who attend the class of each subject as follows:



localhost/phpmyadmin/sql.php?server=1&db=attendance&table=cmc&pos=0

phpMyAdmin

Server: 127.0.0.1 Database: attendance Table: cmc

Showing rows 0 - 3 (4 total, Query took 0.0013 seconds)

```
SELECT * FROM `cmc`
```

Number of rows: 25 Filter rows: Search this table Sort by key: None

ID	Code	Year	Section	Rollno	Macid	Time
10	0	4	c	316126512147	1	2020-03-14 22:59:18
11	0	4	c	316126512150	2	2020-03-14 22:59:18
13	0	4	c	316126512160	3	2020-03-15 10:39:07
14	0	4	c	316126512156	4	2020-03-15 10:39:07

Query results operations

Bookmark this SQL query

Label: Let every user access this bookmark

Bookmark this SQL query

localhost/phpmyadmin/sql.php?server=1&db=attendance&table=cmc&pos=0

Type here to search 10:49 AM 15-03-2020

Home | x Kodular | x QR Code | x localhost | x localhost | x localhost | x Javascript | x PHP Arr | x How to | x MySQL | x MySQL | x MySQL | x

localhost/phpmyadmin/sql.php?server=1&db=attendance&table=ofc&pos=0

Apps National Program... moodle TCS EnQuode 2019... InfyTQ: Learning A... ANITS Student Login Registration Compl...

phpMyAdmin Server: 127.0.0.1 » Database: attendance » Table: ofc

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 3 (4 total. Query took 0.0013 seconds.)

```
SELECT * FROM `ofc`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

ID	Code	Year	Section	Rollno	Macid	Time
4	0	4	c	316126512174	1	2020-03-15 10:35:54
5	0	4	c	316126512175	2	2020-03-15 10:35:54
8	0	4	c	316126512163	3	2020-03-15 10:37:02
9	0	4	c	316126512147	4	2020-03-15 10:37:02

Check all | With selected | Edit | Copy | Delete | Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print | Copy to clipboard | Export | Display chart | Create view

Bookmark this SQL query

Label: Let every user access this bookmark

Bookmark this SQL query

Console

Type here to search

10:49 AM 15-03-2020

- Here we can also see the absentees in our app by clicking the view attendance button and we can check the absentees of each class.



Select Subject

scgps

316126512146

316126512152

316126512160

Attendance

Select Subject

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7. CONCLUSION

This work is done with the help of Xampp server, Kodular app and Android mobile. It's aim is to detect Students with in the classroom and mark their attendance. It displays the students roll numbers who were not present in the classroom i.e, Absentees. Thus, it automatically mark the attendance of the students with in the classroom. It can be extended for implementation in Schools, Organization etc.

In this world of Automation, This automatic attendance management system plays a major role in various fields.

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