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MODULE 6:

INTRODUCTION TO PYTHON:

Why Python?

Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).

Python has a simple syntax similar to the English language.

Python has syntax that allows developers to write programs with fewer lines than some other programming languages.

Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.

What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.

***Windows*:** There are many interpreters available freely to run Python scripts like IDLE (Integrated Development Environment) that comes bundled with the Python software downloaded from **http://python.org/**

INSTALL PYTHON:

Many PCs and Macs will have python already installed.

To check if you have python installed on a Windows PC, search in the start bar for Python or run the following on the Command Line (cmd.exe):

```
C:\Users\Your Name>python –version
```

To check if you have python installed on a Linux or Mac, then on linux open the command line or on Mac open the Terminal and type:

```
Python –version
```

If you find that you do not have Python installed on your computer, then you can download it for free from the following website: https://www.python.org/

```
Python Quickstart
```

Python is an interpreted programming language, this means that as a developer you write Python (.py) files in a text editor and then put those files into the python interpreter to be executed.

The way to run a python file is like this on the command line:

```
C:\Users\Your Name>python helloworld.py
```

Where "helloworld.py" is the name of your python file.

Let's write our first Python file, called helloworld.py, which can be done in any text editor.

Helloworld.py

Print("Hello, World!")

Simple as that. Save your file. Open your command line, navigate to the directory where you saved your file, and run:

```
C:\Users\Your Name>python
```

The output should read:

Hello, World!

Congratulations, you have written and executed your first Python program.

Now we can write pytthon programs…

MODULE 7:

Raspberry Pi

- Raspberry Pi, developed by Raspberry Pi Foundation in association with Broadcom, is a series of small single-board computers and perhaps the most inspiring computer available today.

Generations and Models

In 2012, the company launched the Raspberry Pi and the current generations of regular Raspberry Pi boards are Zero, 1, 2, 3, and 4.

- On the other hand, the Raspberry Pi A models have a smaller and more compact footprint and hence, these models have the reduced connectivity options.

- Raspberry Pi Zero models, which come with or without GPIO (general-purpose input output) headers installed, are the most compact of all the Raspberry Pi boards types.

History

Software developer Eben Upton and Software Engineers Pete Lomas and David Braden formed the Raspberry Pi foundation in 2006. The main aim of this foundation was to devise a computer to inspire children. Hence, in order to reduce the cost, the early prototypes of the Raspberry Pi were based on the 8-bit Atmel ATmega microcontroller.

On February 29th, 2012, the team started taking the orders for Model B and in the same year, they started its production run which consisted of around 10,000 units. These models were manufactured by the founders in China and Taiwan.

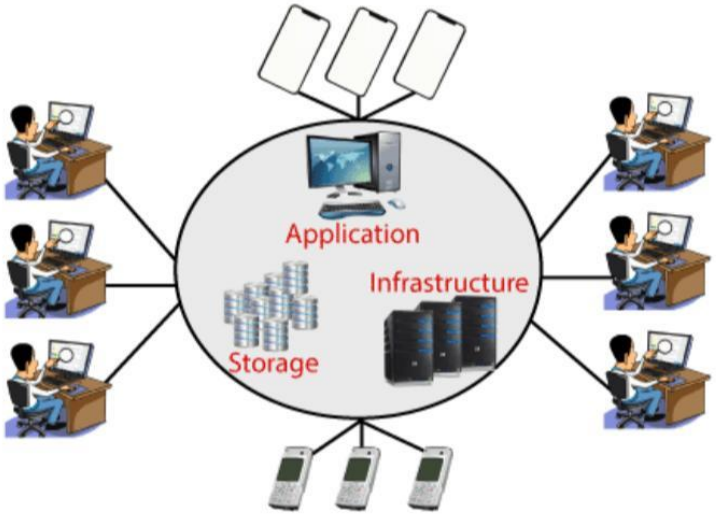
On February 4th, 2013, they started taking the orders for lower cost Model A. Similarly, on November 10th, 2014, the team launched for even more low-cost Model A+. The cheapest Raspberry Pi Zero was launched on November 26th, 2015.

The name Raspberry Pi was chosen with “Raspberry” as an ode to tradition of naming early computer companies after fruit. Here, "Pi" is for Python Programming Language.

MODULE 8:

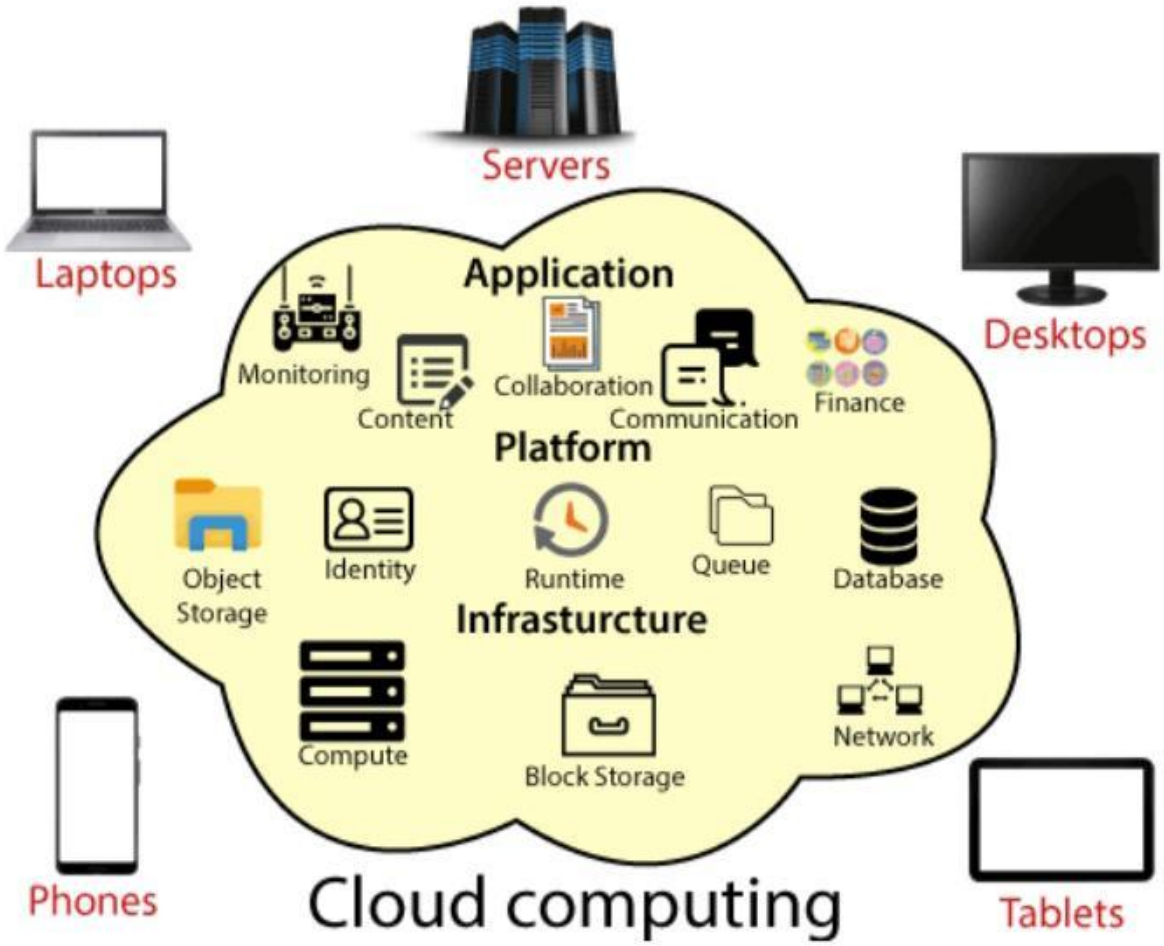
Introduction to Cloud

Cloud Computing is the delivery of computing services such as servers, storage, databases, networking, software, analytics, intelligence, and more, over the Cloud (Internet).



- Cloud Computing provides an alternative to the on-premises datacentre. With an on-premises datacentre, we have to manage everything, such as purchasing and installing hardware, virtualization, installing the operating system, and any other required applications, setting up the network, configuring the firewall, and setting up storage for data. After doing all the set-up, we become responsible for maintaining it through its entire lifecycle.

- But if we choose Cloud Computing, a cloud vendor is responsible for the hardware purchase and maintenance. They also provide a wide variety of software and platform as a service. We can take any required services on rent. The cloud computing services will be charged based on usage.


Servers
Laptops
Desktops
Application
Monitoring
Content
Collaboration
Communication
Finance
Platform
Object Storage
Identity
Runtime
Queue
Database
Infrasturcture
Compute
Block Storage
Network
Phones
Tablets
Cloud computing

Advantages of cloud computing:

Cost: It reduces the huge capital costs of buying hardware and software.

Speed: Resources can be accessed in minutes, typically within a few clicks.

Scalability: We can increase or decrease the requirement of resources according to the business requirements.