LECTURE 1 – ICT1233

INTRODUCTION TO INTERNET PROGRAMMING

Department of ICT
Faculty of Technology

Objectives

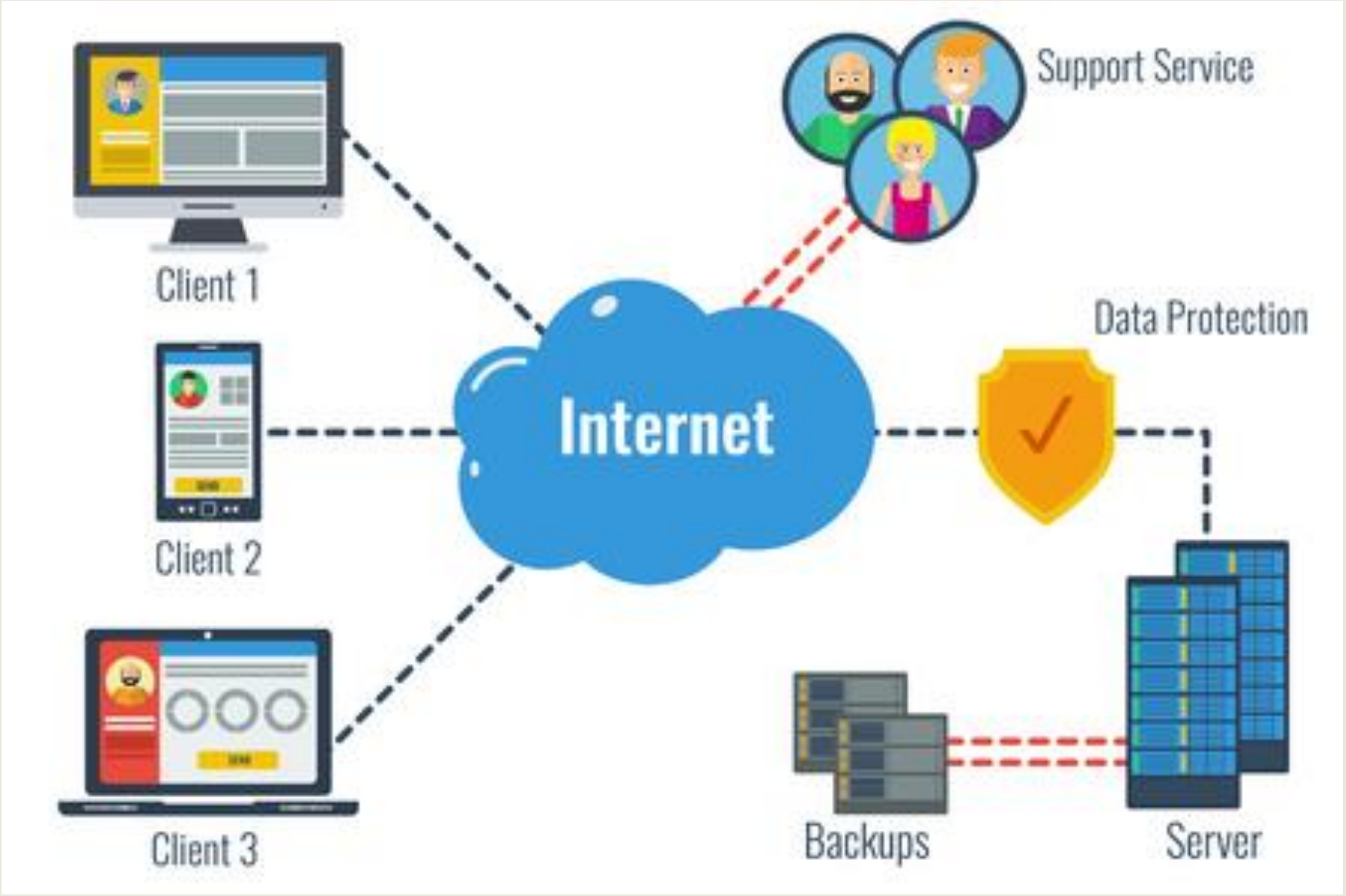
Identify the basics of client server architecture

Identify the different components for developing client/server applications

Internet

- A global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide
- When two computers are connected over the Internet, they can send and receive all kinds of information such as text, graphics, voice, video, and computer programs
- In the late 1960s, ARPA (the Advanced Research Projects Agency) ARPA proceeded to implement the **ARPANET**, which eventually evolved into today's **Internet**

https://www.youtube.com/watch?v=Dxcc6ycZ73M

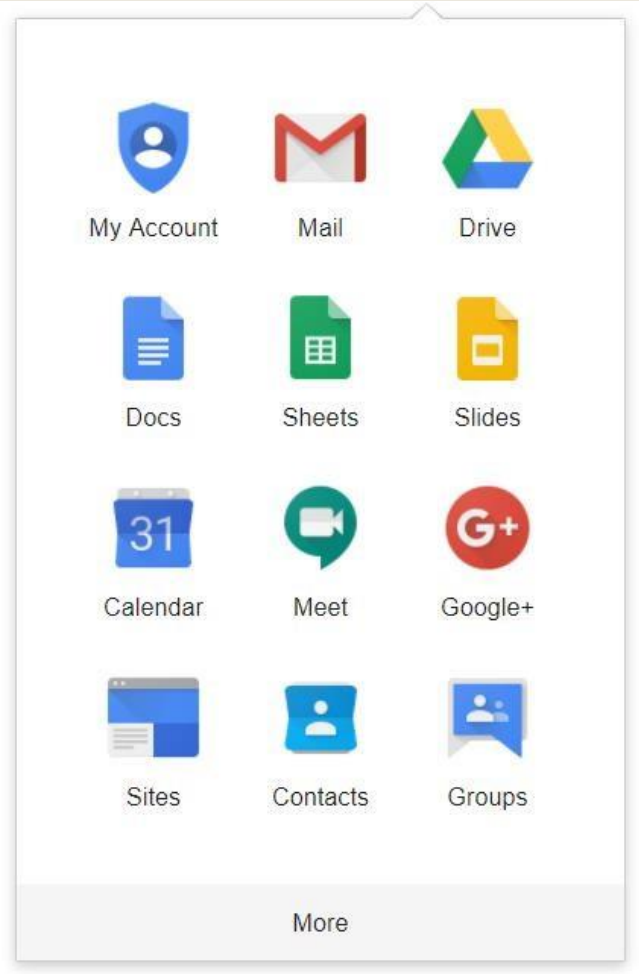

Support Service
Client 1
Data Protection
Internet
Client 2
Client 3
Backups
Server

Web Application

- A computer program allowing website visitors to view or submit and retrieve data to/from a database over the Internet using their preferred web browser
- Web application use a combination of,
  - *server side scripts (PHP / ASP) to handle the storage and retrieval of the information and*
  - *client side scripts (JavaScript / HTML) to present information to users*

Web Application Example

Google Apps



Web Client and Web Server

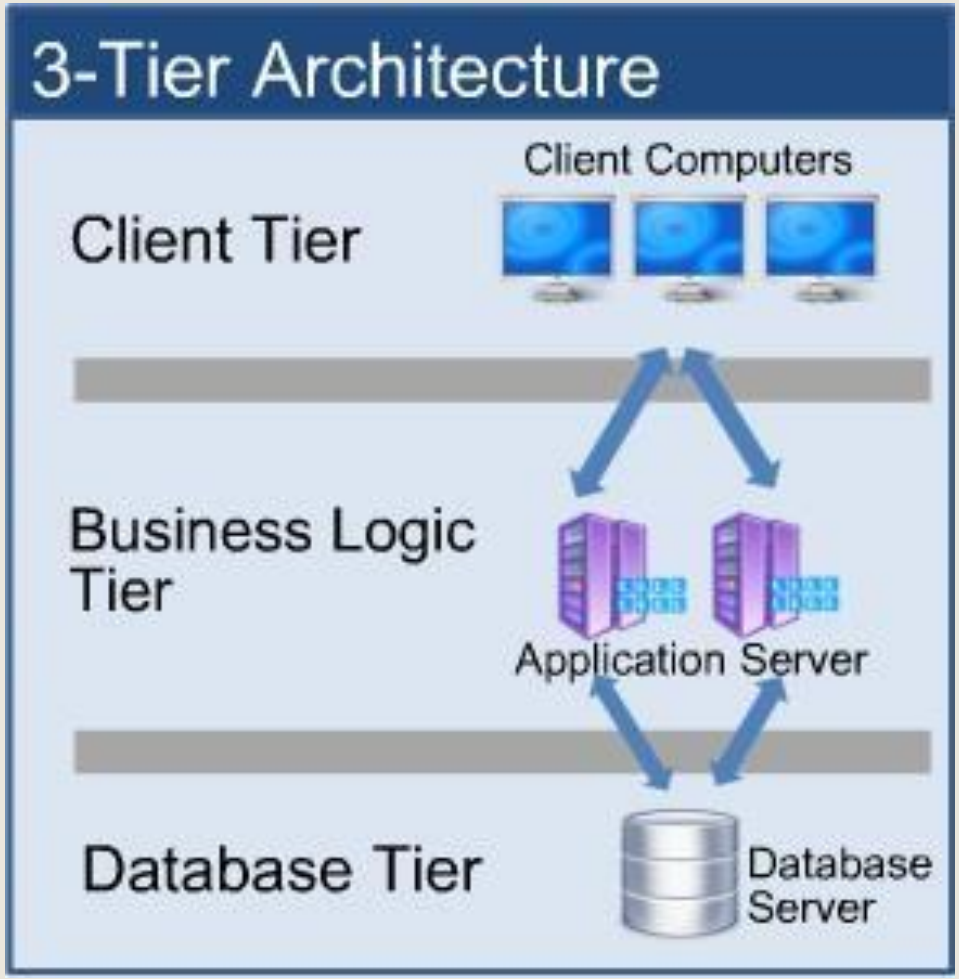
- Web client
  - *Browser that makes the requests to the server*
- Web Server
  - *Responds to client requests by providing resources*

- Web server and client communicate with platform independent Hypertext Transfer Protocol (HTTP)

Web Server

- AWeb server consists of a physical server, server operating system (OS) and software used to facilitate HTTP communication
- Web server software runs on web server machine
- Responds to client requests by providing resources
- Executes server side scripts (PHP,JSPs, ASP, etc) that provide functions such as database accessing

3- Tier Architecture



Scripting

- Scripting is just a way to automate getting information to and from your computer (and other computers)
- A **script** or a **scripting language** is a computer language with a series of commands within a file that is capable of being executed without being compiled
- Server side scripting languages
  - *Perl, PHP, Python*
- Client side scripting languages
  - *JavaScript*

Client Side Scripting

- The client is the system on which the Web browser is running
- Enhances functionality and appearance
- Makes pages more dynamic and interactive
- Client-side scripts are interpreted by the browser
- Client side scripting rely on the user's computer. If the computer is slow they may run slowly
    - *Ex: JavaScript*

Server Side Scripting

- The script is interpreted by the **server**, run on the server and generate results which are sent to the user
- Designed to interact with back-end permanent storage, like databases, and process information from the server to access the database
- **Facilitates the transfer of data** from server to browser, bringing pages to life in the browser
  - *Ex: processing and then delivering a field that a user requests or submits in a form*
- Server-side scripts are never seen by the user
- Examples:
  - *ASP, JSP, PHP*

Client Side Scripting vs. Server Side Scripting

Client-side scripts

- Downloaded, interpreted and executed by the browser
- Enhance web pages with allowing access to functions of the web browser of the user's computer
- Validate user input
- Reduce requests needed to be passed to server

Client Side Scripting vs. Server Side Scripting

Server side scripting

- Execute on server
- Generate custom response for clients
- Wide range of programmatic capabilities
- Access to server-side software that extends server functionality

WAMP - Windows

- Windows is a group of several proprietary graphical operating system families developed and marketed by Microsoft.
- Runs each of the other components

WAMP – Apache Web Server

- Provides the mechanics for getting a Web page to a user
- The PHP component actually sits inside Apache, and you use Apache and PHP together to create your dynamic pages
- Free and Open-source
- Currently the most popular Web server application

WAMP – MySQL

- Free and open source
- Provides the data-storage side of the WAMP system
- Support different operating systems
- Within the Web application, all the data, products, accounts, and other types of information will reside in this database

WAMP – PHP

- PHP: Hypertext Preprocessor
- Awidely-used general-purpose scripting language that is especially suited for web development and can be embedded into HTML
- Popular server-side scripting technology
- Open-source
  - *Anyone may view, modify and redistribute source code*
  - *Supported freely by community*
- Platform independent

Questions