

Assignment brief

Learning Outcomes and Assessment Criteria 2020-21



Sample number: 2

Unit Title: Information Technology Systems – CN1/3/AA/01G

Overview of assessment task

Produce a report entitled ‘Applications of Information Technology’.

Task 1 – Section 1

The main categories of applications(uses) of Information Technology can include:

- Communication
- Interactive communication
- Data handling
- Measurement
- Control
- Modelling

From this range of applications(use), choose three examples:

1. Identify the type of application.
2. Describe the application and how it works.
3. Evaluate the IT applications and systems by giving details of the inputs, processes and outputs required and any input and output devices used. You should illustrate your work with a system flowchart or similar diagram if you wish.
4. State the source(s) of your information

Possible examples include: newspaper production, supermarket checkout system, traffic lights control, weather station, college website, personnel records. (1000 words)

Task 2 – Section 2

It is important that you understand the difference between applications (programs) and systems software. Give the definition of each type, explaining what this actually means by giving examples for both. Explain the features that set them apart. (500 words)

Learning outcomes and assessment criteria

Learning Outcomes	Assessment Criteria
1. Understand the variety of applications of Information Technology	1.1. Evaluate three types of Information Technology applications 1.2. Distinguish System Software and Application Software

Grading Descriptors and Components 2020-21

Sample number: 2

Unit title: Information Technology Systems – CN1/3/AA/01G

GD 1: Understanding of the subject

Merit	Distinction
The student, student's work or performance: a. demonstrates a very good grasp of the relevant knowledge base	The student, student's work or performance: a. demonstrates an excellent grasp of the relevant knowledge base

GD 7: Quality

Merit	Distinction
The student, student's work or performance: a. is structured in a way that is generally logical and fluent	The student, student's work or performance: a. is structured in a way that is consistently logical and fluent

Applications of Information Technology

Module Name: Information Technology Systems

Assignment Number: 1 of 4

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Task 1

There are many different applications within IT, and in this task, we will explore 3 examples of those applications, and evaluate the inputs, outputs, and processes.

Example 1

Application Name: Microsoft Excel

Category: Data Handling

What is it?: Microsoft Excel is a spreadsheet package that can be used to organise data and manipulate that data using formulas and functions. Organisations can use excel for a number of different tasks such as data entry and management; accounting; data analysis and could even be used for time management. (Corporate Finance Institute, 2019)

How does it work: Excel spreadsheets can be as simple or as complicated as the user wants them to be. On the simple end of the scale, they can enter their data into a table made up of cells (single boxes) organised into rows and columns. Once they have created a simple table of data, excel offers an array of powerful tools that can be used to manipulate the data or to analyse in some manner. (Office.com, 2019)

Customer Number	Married?	Amount awarded
1256525	Yes	£1,916.00
2515645	Yes	£1,916.00
2521565	No	£1,716.00
2552524	Yes	£1,916.00
6855455	Yes	£1,916.00
8554565	No	£1,716.00
5456545	No	£1,716.00
6458854	No	£1,716.00
8555456	Yes	£1,916.00
6554558	Yes	£1,916.00
5654554	No	£1,716.00

Figure 1 - Data arranged in an Excel Table

For example, an employee at a finance company might be provided with some customer data, and asked: "how much have we awarded to a particular group of people from this list?" That customer data can be put into an Excel spreadsheet as a table. Excel then has a function to filter the data based upon the column headings - the user could filter the data down to only the customers they needed. Once this has been done, the user can add another row to their table and can use a function to get the total of the amount awarded to the customers remaining on the filtered table. A function is an expression that is used to tell the computer what the value of that cell should be. To get the total amount awarded a user can call the SUM function which would add up all the numbers in the stated cells. (GCFGlobal.org, 2016)

Customer Number	Married?	Amount awarded
2521565	No	£1,716.00
8554565	No	£1,716.00
5456545	No	£1,716.00
6458854	No	£1,716.00
5654554	No	£1,716.00
	Total:	£8,580.00

Figure 2 - Data filtered and summed.

Inputs, Outputs, and Processes: At the most basic level, data is input using a mouse to point at the cell required and to select that cell. A keyboard can then be used to type in data. This will all be displayed on a monitor. The user can also print out spreadsheets, which would require a printer.

The processes that take place on a spreadsheet package, will differ from function to function. Here we will look at two basic examples, SUM and IF.

SUM

With SUM it takes as input the values of certain selected cells, it then processes them by adding them all together, and it then outputs the total.

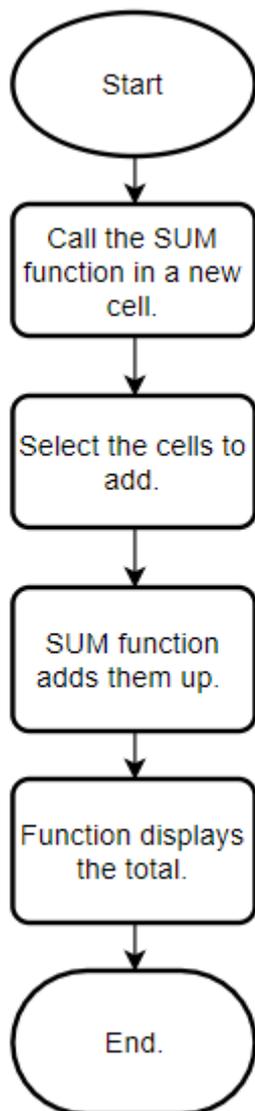


Figure 3 - The process of the SUM function

IF

The IF function can be used to perform an action based upon whether or not a logical test evaluates as true or false. For example, we could ask excel to display “yes” or “no” based upon if the number is positive or negative by asking IF Cell > 0 then display “yes” otherwise display “no”.

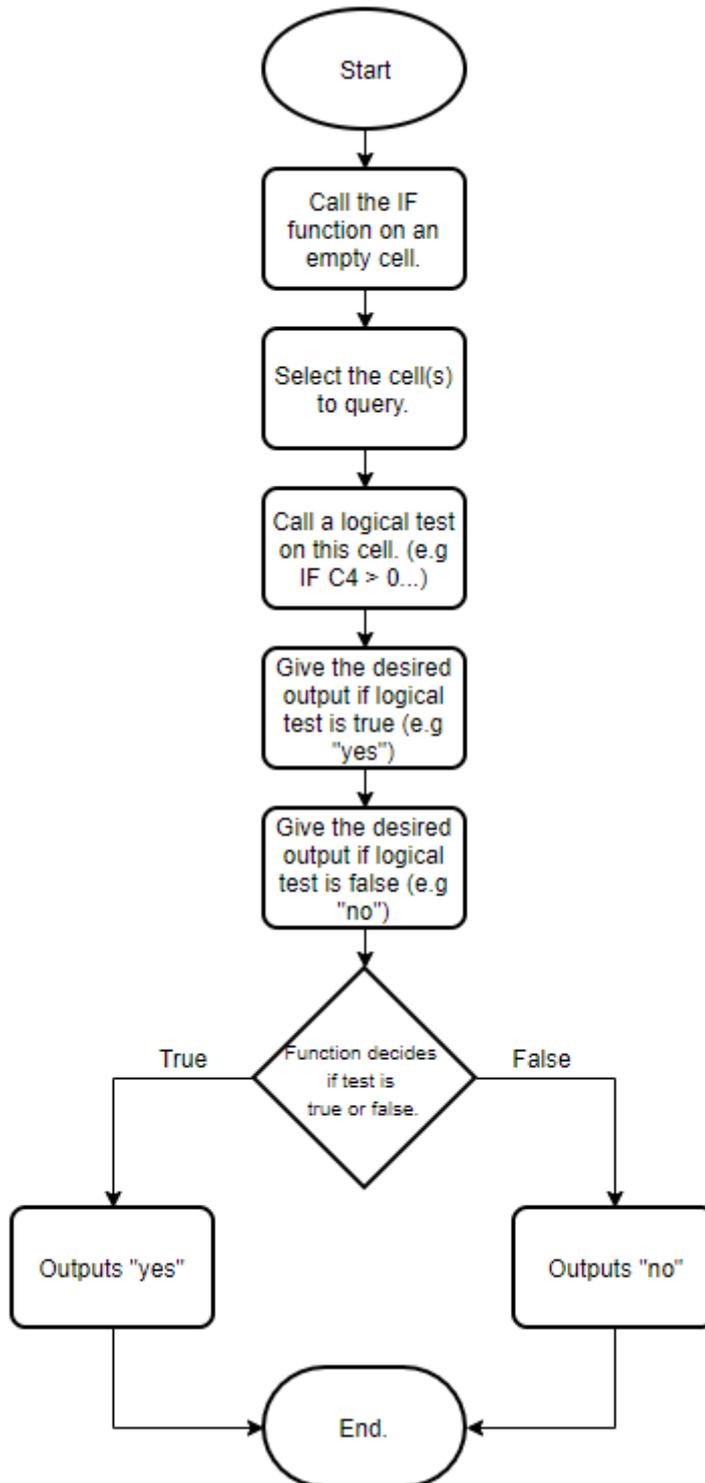


Figure 4 - The processes of the IF function

Example 2

Application Name: Facebook Messenger

Category: Interactive Communication

What is it? Facebook Messenger is an Instant Messaging (IM) service. Instant messaging is an application that allows users to communicate using messages in near real-time where they are both using the same service. (Cambridge Dictionary, 2019) (Encyclopedia Britannica, 2019)



Figure 5 - Facebook Messenger on a mobile platform (Fingas, 2019)

How does it work? With Facebook Messenger, one user can type out a message and press a button to send it. This message will then be sent via an internet connection to the other user where the message will be displayed, along with who it was from for them to read. The other user can then type out their own message, send that and it will be displayed on the 1st user's screen. Users can also send photos, videos, and sound through the same connection, and they will be received by the other user so they can view it. (Lifewire, 2019)

Inputs, outputs, and processes: Focussing only on the core feature, sending text messages, and considering a desktop environment (not a mobile one) the only peripherals required are a keyboard for typing messages, a mouse and a screen to output to. An internet connection would also be required so that your messages can be sent to the other user.

Taking into consideration other features such as sending photos, the user would require a camera, and to send sound a microphone would be needed.

To send a message the app creates a packet containing the message the first user has input, and this is sent to the server for storage. The server then checks this packet and determines who it is supposed to be sent to. The server creates a copy of this packet and then sends it to the second user's client application. The second user now has the text message output to their screen. (Symantec.com, 2019)

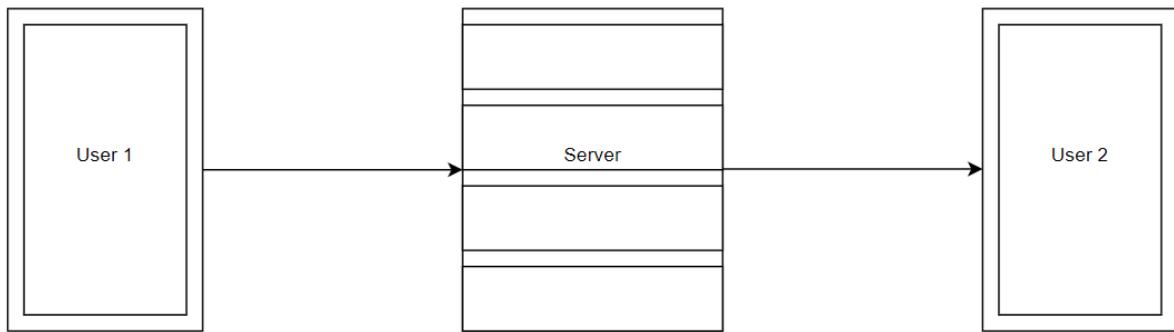
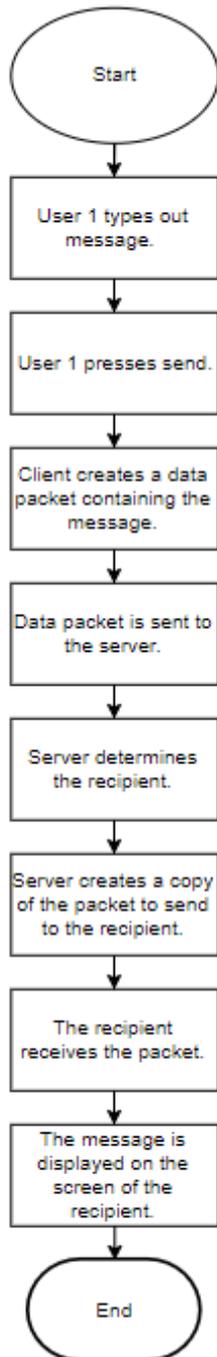


Figure 6 - The path of a data packet



**Figure 7 - Processes of an IM application.
Example 3**

Application: Google Analytics

Category: Measurement

What is it? Google Analytics is a tool that can help a website owner gain some valuable insights into the traffic coming onto their website. It can track the number of unique visitors, how long people spend on the site, and even what type of device your users are visiting on. (Johnson, 2019)

How does it work? Google Analytics uses cookies to track a user. A cookie is a text file with a unique user ID that a website is able to store on a user's machine, and can later be retrieved by the webserver. It can also store other pieces of information, for example - items in a user's shopping basket. On your return to the website, your browser returns this cookie file to the webserver, and from this information, data can be generated regarding how many times you have visited for example. (Panda Security Mediacycenter, 2019), (lu.edu, 2018) (Acxiom, 2017)

Inputs, outputs, and processes: Peripheral-wise on the business user end of Google Analytics a mouse, keyboard and monitor would be required to use the application and for the results to be displayed. An internet connection would also be required. The application would take as input the cookie files from users accessing the site, as an output, it will give various graphs and charts that the user can interpret. The process of how a cookie would work is described above.

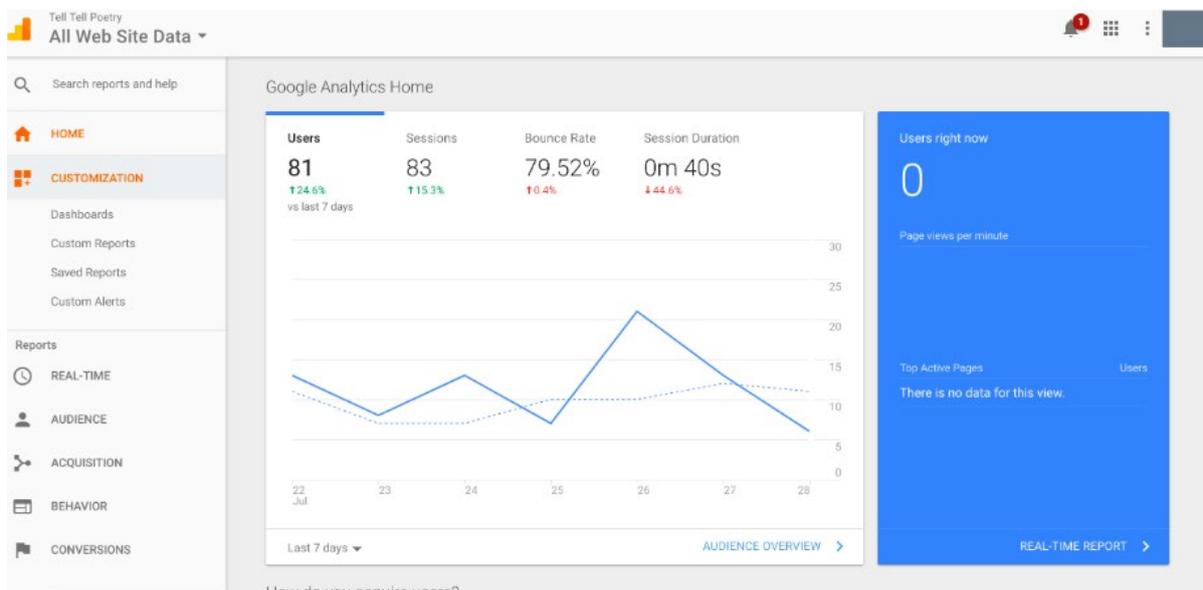


Figure 8 - Google Analytics dashboard (Segment, 2019)

Task 2

Software is defined as *“the instructions that control what a computer does”* (Cambridge Dictionary, 2019) and there are broadly 2 different types of software, System, and Application. In this task we will explore both, and what makes them different.

System Software

This is software that interacts directly with the hardware of the device in order to control it and is installed onto your system when you install your operating system (which in itself can be classed as system software). Types of programs that can fall under system software can be assemblers, compilers, and debuggers as well as programs such as system preferences. It is, therefore, a platform on which application software can be run. Application software lies at a level just above the hardware. (What is System Software, 2019) (Techterms.com, 2019) (Dinesh Thakur, 2019)

Application Software

This type of software is that which can perform a specific task that the user wants, and it will deal with the user inputs directly. Application software is usually installed as and when the user may require it. Some examples of application software could be a word processing program such as Microsoft Word or a web browser like Google Chrome. Application software lies at a level just below the user. (EDUCBA, 2015) (Dinesh Thakur, 2019)

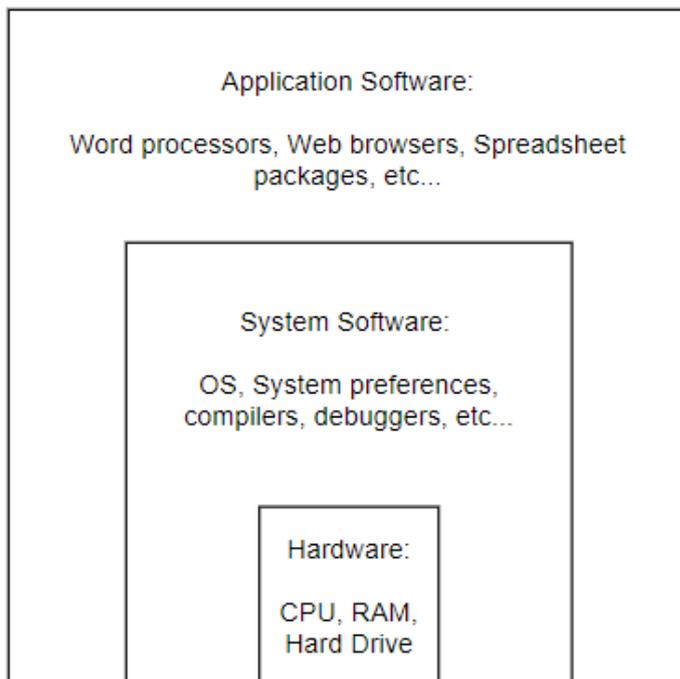


Figure 9 - The levels of software compared to hardware.

Differences between Application and System Software

There are a number of differences between Application and System Software, and these are easiest to display in a table for comparison see figure 10 below for that comparison.

Point of Comparison	System Software	Application Software
Use	Used to control the hardware	Used to perform a task for the user
Interaction	Usually not interacted with by the user	Usually only controlled by the user.
Requirement	Can run independently of other software	Must be run in the presence of System Software as a platform
Installation	Installed when the OS is installed	Installed as and when the user requires
Language	Usually written in a low-level language such as assembly	Usually written in a high-level language e.g Java or Python
Running	Runs from system startup to system shutdown.	Run when the user requires
Hardware Access	Has full access to the hardware	Has limited access to the hardware.

Figure 10 - Comparison of Systems and Application Hardware

(The Crazy Programmer, 2016) (Tech Differences, 2016) (STechies, 2018)

Conclusion

In the course of this report, we have evaluated the inputs, outputs, and processes of 3 different application software, and in the second task, we have learned exactly what is meant by application software as well as system software. We have also learned that there are a number of key differences between the two.

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