

# Big Data Corporation Academy

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GA33COM12 – Developing Spreadsheets

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## What functions were used and why were the functions used?

To get the correct output for the spreadsheet in excel, the following functions have been used, some of these functions have been joined together to get the results needed, although most have been used on their own due to only simple sums it required. The main function used was the **if** function, this has been used for multiple formulas to get the results that are needed to retrieve selected data that will give a **true** or **false** statement, for example, to check each sheet to see if any students had exam marks below 25, **if true** this needed to return with a warning beside the students ID to alert staff. Also used are nested **if** statement to determine if the student has No Grade, Pass, Merit or Distinction. Within a nested function are a number of other important functions which can be used, for instance, there is the **vlookup**, this is used with **iferror**, **indirect**, **index**, **match** and **countif**, all are used to set up the search function to retrieve data from multiple sheets by keying in the ID number of the student, for example, the **IFERROR** is used to hide the 'n/a' that shows when no data has been entered into the search field, then entering the input into the **vlookup** function and give direction to E4 cell as user input, with **indirect**, **index**, **match** and **countif**, **countif** part is checking each sheet for a match, **match** is looking for the value returned by **countif** result, **index** uses the results from **match** and returns the first value in Sheet "1,2 or 3", **indirect** gives all the data done by **countif**, **index** and **match** to the **vlookup**, they guide the **vlookup** at all three sheets and check the data stored in cells A2:N11 and depending on the field the data is for it will list the column and cell I wish to retrieve data from for my search results. Here is an example of one of those formulas:

```
{=IFERROR(VLOOKUP(E7,INDIRECT("'"&INDEX(S8:S10,MATCH(TRUE,COUNTIF(INDIRECT("'"&S8:S10&"! A7:M16"),E7)>0,0))&"! A7:M16"),4,0),"")}
```

Also covered is the **AVERAGE** function this is to average the overall grades of the students for each level as shown below.

```
=AVERAGE('Digital Tech Level 1'!D7:K16)
```

A **SUM** function has been used numerous times throughout the spreadsheet to do simple additions such as adding selected fields to give a total by either addition, subtract, divide or multiplication. An example listed below shows addition, multiplication and divide.

```
=SUM(E7,G7,I7,K7*2/2)
```

**MIN** and **MAX** have been used to find the top and bottom marks from each level 3 of each have been used below are two examples of how both min and max have been used within the spreadsheet.

```
=MAX('Digital Tech Level 1'!M7:M16)    =MIN('Digital Tech Level 1'!M7:M16)
```

Buttons have been placed on all sheets for easy navigation from one page to the next with a button, depending on the level to navigate to the pivot table connected to that level, these have been hidden and are only revealed once the button has been pressed then the sheet will be hidden again once the buttons inside that sheet have been used.

Student Search		
Level 1	Level 2	Level 3
L1 Pivot Table		

'AND' function has been used within an IF statement to generate a 'pass' or 'fail' reading for each exam.

```
=IF(AND(K7<9),"Failed", "Passed")
```

## How does the spreadsheet system meet end-user requirements?

Over the planning of the spreadsheet, the aim was to reduce the need for staff to use the other sheets by putting much of the needed information on the 'Student search and Data' sheet to make it easy and less time consuming for the staff, to this a search function has been added for staff to look up individual student details to see how they are progressing with both mock and modular exams. Also added is an option to show staff if students marks are below a certain threshold this is currently set to 25 marks, this will display a TRUE or FALSE statement for the staff if the student is below or above target overall. Although if there is a need to view the student sheets per level, they have been laid out to aide staff in finding the correct information manually by colour coordinating the layout to make each row stand out from one another. The spreadsheet is also protected with a password and formulas have been hidden so they cannot be edited by mistake, only the search cell in E4 on the student search sheet has been left editable to allow staff access to the search feature.

## Could any alternative functions be used to enhance performance?

Possible choices for alternative functions would be LARGE and SMALL to replace MAX and MIN these will find the highest number and lowest in a set of selected criteria, although this function doesn't enhance performance it's a nice alternative to remember.

## Functions for analysing data

Within the spreadsheet, a pivot table for each year has been added which can be edited to cross-reference any data across the sheets they are related too. Options have been added with macros to unhide these sheets to view and make them hidden when clicking the buttons to leave them. Other charts have been added to the first sheet to represent the data between the mock exams and the modular exams. Other ways to analyse data would be to use, formulas such as CONCATENATE which merges two or more cells into one individual cell displaying a larger cell across rows and columns within a worksheet. When concatenating cells only the content of those cells are combined, this can be for two or more values and is often used to combine text from different cells.

## Manipulation and interpretation of data

Data within a spreadsheet has many ways in which they can be manipulated or interpreted. This is a process of changing data so it can be read easier or make it more organised for example to order the worksheet in alphabetical so that names or places entries can be easily located. There are three types of data in cells are values are generally raw numbers such as whole numbers or values with a decimal place, or dates in any given format like 00/00/000 or 00 Month no matter the format given for any of these, excel will automatically revert them to the default format. Labels are descriptive information such as names, months or anything with written identifying statistics, these usually include alphabetical characters. Formulas are instructions for excel to perform to carry out calculations or retrieve certain data depending on what there required result should be.

## Justified evaluation of the spreadsheet system.

The evaluation of a spreadsheet has many pros and cons. The main advantage is that a spreadsheet is the number one tool for collecting and organizing data, this data can be stored within columns and rows and can be easily sorted if a large volume of data there are many inbuilt tools to aide the user

to present the data in a chart or table so it can be analysed for easy interpretation. Another advantage for a spreadsheet is its ability to do all the repetitive calculations for you, the user must write the formula for it to understand and it will calculate the result. Within today's work environments multiple user access a single file often, although some software have more limitations than others with Google sheets multiple users can access the same file and edit it in real-time of each other, Microsoft office on the other hand although files can be shared only one user at a time can access and edit the file if the file is saved and updated locally no other user would have access to that data.

Some downsides to the operation of a spreadsheet can be information chosen by the user, which can manipulate the decision, some companies have found means by using analytic data visualisation software, just so they are not solely relying on spreadsheets. The syntax of a spreadsheet can be a major disadvantage while using formulas as many users find this difficult to understand, if the formula is incorrect the code will not return the correct information, this also could be said if data is entered wrong in a cell within the formula which could bring back the wrong calculation. Another disadvantage to spreadsheets is the security of the file and its contents from data corruption to mismanagement of any information, as most spreadsheets are financially inclined this data could be sensitive and wouldn't want it to fall in unsavoury hands such as hackers as even the file being password protected isn't enough to protect it.