

Analysing Students' Results Using Microsoft Excel

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Abstract— An excellent tool for processing students' examination results is Microsoft Excel. Its usefulness is not limited to just organizing information in rows and columns but it has functions and formulas that can help in simplifying examination result computation process. In this work, we designed and implemented an examination result processing template for Federal Polytechnic Ekowe, Bayelsa State. This was necessitated because of some impediments in the manual result processing. Tedious tasks involved in the manual process is reduced considerably.

Keywords—GPA; CGPA; Students Result; Computation; Microsoft Excel; Linking Worksheets; Excel Template;

I. INTRODUCTION

Microsoft Excel is an excellent tool used for business accounting, data analysis and computing and tracking students' grades. It has formulas and functions used in analyzing large amounts of data. Excel contains a large grid of rows and columns where data is entered, typically from the keyboard. You can build formulas into selected cells which automatically carry out calculations on designated sets of data (Poole, Jackson, and Randall, 2002). The information about students in Excel can be used to proffer solutions to a wide range of educational challenges. Information about a student which shows for example names, registration number, scores, grades for the semesters, GPA (grade point average) and CGPA (cumulative grade point averages) or whatever characteristics you choose can be printed and given to the students' parents (Osagie, 2013).

Grades a student acquire at the end of a semester is used to measure their academic performance. Grading is a way of applying standardized measurements of different levels of accomplishment in a course. Grades can be doled out as letters (for instance, A through F),

as a range (for example, 1 to 6), as a percentage, or as a number out of a possible total (Intravaia, 2009)

There is a wide range of benefits to using Microsoft Excel in processing students' results. They include (Assor, 2019):

- i. Excel can organize large amounts of data. It can create graphs or pictorial representation of your data
- ii. It can be integrated with several other business applications. It can be used for analysis and decision making.
- iii. Excel can be used to input student scores and grades.
- iv. Excel is part of Microsoft office suite which comes with most PC.
- v. Excel files can be password protected for extra security. Password can be created through VB programming or within the Excel file. Excel can be integrated with databases.
- vi. Excel makes it easy to store the data, perform numerical calculations, format the cells, and adjust layouts to generate the output and reports to share with others.

This work aims to design and implement a template in Microsoft Excel for the processing of students' result which will reduce drastically the tedious nature of manually computing students' results. It will significantly improve accuracy, efficiency and standardized result computation.

II. METHODOLOGY

The IF, SUM, ISBLANK and VLOOKUP functions were used in this work. Several worksheets were linked together to create an awesome template.

A. The IF Function

The IF function is one of the logical functions in Excel. The IF function checks whether a condition is

met and returns one value if TRUE and another value if FALSE. The IF statements, also allows you to add multiple arguments to produce different results.

The syntax for Excel IF Function is as follows (Magaji and Abdulkadir, 2015):

IF(logical_test, [value_if_true], [value_if_false])
 Specifically, the IF function has 3 arguments, but only the first one is obligatory, the other two are optional.

- logical_test - a value or logical expression that can be either TRUE or FALSE {Required}. In this argument, you can specify a text value, date, number, or any comparison operator.
- value_if_true - the value to return when the logicaltest evaluates to TRUE, i.e. if the condition is met {Optional}.
- value_if_false - the value to be returned if the logical test evaluates to FALSE, i.e. if the condition is not met {Optional}.

The IF function in Excel can be nested, when you have multiple conditions to meet. The FALSE value is being replaced by another IF function to make a further test.

B. The SUM Function

The SUM function in Excel is used to sum a range of cells, an entire column or non-contiguous cells (that is, cells not next to each other). The SUM formulas can be combined with other Excel functions to create an amazing SUM function (Scott, 2012).

The AutoSum button is the fastest way to sum a range of cells. The SUM function is entered automatically in the selected cell.

- Select the blank cell in the row below the cells that you want to sum, that is cell A5 as shown in fig. 1.

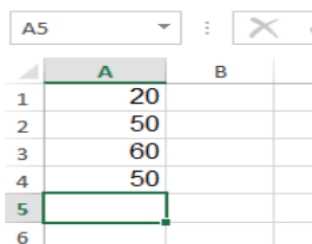


Fig. 1. Showing Cell A5 – Adapted from (Dalglish, 2020)

- Click the AutoSum command on the Ribbon's Home tab, or use the keyboard shortcut: Alt +=

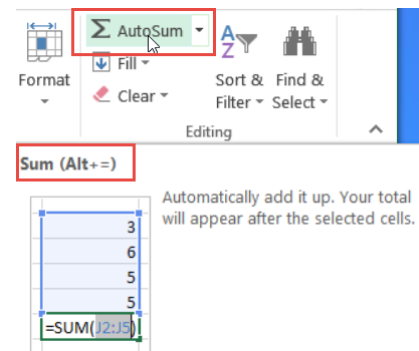


Fig. 2. Showing AutoSum Command – Adapted from (Dalglish, 2020)

- A SUM formula will appear in the active cell, with a reference to the cells above. In fig. 3, there is a SUM formula in cell A5: =SUM(A1:A4)

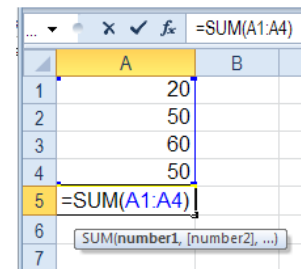


Fig. 3. Showing SUM formula at cell A5 – Adapted from (Dalglish, 2020)

The SUM function totals one or more numbers in a range of cells. The syntax of the SUM function is: SUM(number1, [number2],...).

- It has one required argument: number1
- It also has optional arguments (enclosed in square brackets): [number2],...

C. The ISBLANK Function

The ISBLANK function is used to test if a cell is empty or not. For example, let's say a cell A1, =ISBLANK(A1) will return TRUE if A1 is empty, and FALSE if A1 contains text a formula (even if the formula returns an empty string " "). One of the best ways to think of ISBLANK is "is empty" since it can return FALSE when cells look blank but are not. For example, if A1 contains a space character (" "), or a formula that returns an empty string (" "), A1 will look blank, but ISBLANK(A1) will return FALSE in both cases (Scott, 2012).

D. VLookUp

VLOOKUP lookups and recovers information in a table. The "\V\" in VLOOKUP represents vertical, which implies the information in the table must be organized vertically, with information in lines. VLOOKUP necessitates that the table is organized with the goal

that query esteems show up in the furthest-left segment. The information you need to retrieve (result values) can show up in any section to one side. At the point when you use VLOOKUP, envision that each segment in the table is numbered, beginning from the left.

E. Linking Worksheets

You may want to use the value from a cell in another worksheet within the same workbook in a formula (Scott, 2012).

- Use the format 'sheetname!celladdress'.
- For example, the value of cell B1 in the current worksheet and cell A2 in the second worksheet can be added using the formula '=B1+Sheet2!A2'.

F. Grading System in Federal Polytechnic Ekowe, Bayelsa State, Nigeria.

Grading System in Federal Polytechnic Ekowe is done using four (4) point grading system and a student's performance in any semester is recorded as the Grade Point Average (GPA) which is a fraction of the course unit and the Weighted Grade Point (WGP). Since the inception of the institution. The table below shows the letter grades used by most Nigerian Polytechnics and their corresponding percentage scores and weighted grades.

Table I. Scores and Letter Grade

Marks/Score (%)	Grade	Weighted Grade Point (GP)
75 and above	A	4.00
70 – 74	AB	3.50
65 – 69	B	3.25
60 – 64	BC	3.00
55 – 59	C	2.75
50 – 54	CD	2.50
45 – 49	D	2.25
40 – 44	E	2.00
39 and below	F	0.00

G. How to use the IF, SUM, ISBLANK

The IF function returns one value if a condition you specify evaluates to TRUE, and another value if that condition evaluates to FALSE. For example, in the formula:

```
=IF(I37="",0,IF(I37="A",4,IF(I37="AB",3.5,IF(I37="B",3.25,IF(I37="BC",3,IF(I37="C",2.75,IF(I37="CD",2.5,IF(I37="D",2.25,IF(I37="E",2,IF(I37="F",0))))))))))
```

The ISBLANK is used in conjunction with the IF function:

```
=IF(ISBLANK(L33),"",IF(L33>=75,"A",IF(L33>=70,"AB",IF(L33>=65,"B",IF(L33>=60,"BC",IF(L33>=55,"C",IF(L33>=50,"CD",IF(L33>=45,"D",IF(L33>=40,"E",IF(L33<=39,"F"))))))))
```

The SUM function was used to determine the Grade Point:

```
=SUM(I11*I35,J11*J35,K11*K35,L11*L35,M11*M35,N11*N35,O11*O35,P11*P35,Q11*Q35,R11*R35,S11*S35,T11*T35)
```

Table III. VLOOKUP Table

	A	B
1	POINT	CLASSIFICATION
2	0.00	FAIL
3	2.00	PASS
4	2.50	LOWER CREDIT
5	3.00	UPPER CREDIT
6	3.50	DISTINCTION

III. RESULT

Table II. First Semester Result of National Diploma in Computer Science

