

**SPREADSHEET-BASED RESULT SOLUTION FOR HIGHER INSTITUTIONS  
(AKANU IBIAM FEDERAL POLYTECHNIC PERSPECTIVE)**

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**Abstract**

*In this article, the authors have outlined an indigenous approach towards developing a spreadsheet result solution for higher institutions; the article has also shown the codes and framework of our work so far. The developmental framework includes the application of spreadsheet program for collection, calculation, analysis and summary of students' result by session. The outcome of this program has been extensively deployed in our institution for student result management because of its unique performance in calculation, error detection/reduction and leverage over the old system of result management. However, this work is a research in progress with some eminent challenges in terms of applying web application features to the spread sheet.*

**Keyword:** Spreadsheet, result management, error reduction, calculation, framework

**Introduction**

This result solution is designed to employ the potentials of spread sheet program (Microsoft Excel) for its mathematical and logical operations. Microsoft Excel uses a grid of cells arranged in numbered rows and lettered named columns to organize data manipulations like arithmetic and logic operations. Its features aid in answering statistical, engineering and financial needs [1],[3] The result processing system of the Akanu Ibiyam Federal Polytechnic, Unwana which before now has been system-based via Microsoft Excel but not web-based has served and it's still serving the Polytechnic semester result solution needs. This article has shown the developmental framework of the offline version and seeks a synergy between this off-line version and web enabled solution as the institution already has a web portal.

**Methodology**

EXAMINATION SCORE/COMPREHENSIVE SHEET (HNDI)											
SECOND SEMESTER 2010/2011 ACADEMIC SESSION											
COURSE TITLE:			ELECTRIC POWER SYSTEM III			Code:		EEP 326		Cr. U.	3
EXAMINATION DATE:			29/08/011			OPTION:		POWER			
SN	REG. NUMBER	NAME	TEST SCORE	PRACTICAL	EXAM. SCORE	EXT. EXAM. SC.	EMP. EXPELETC.	FINAL SCORE	GRADE	REMARK	
1	2010/HND/10472/EE	AGBOEZE EJIKE, JUDE	11	16	9	=	=	36	F	FAIL	
2	2010/HND/10474/EE	AGU HENRY, C.	12	17	36	=	=	65	B	PASS	
3	2010/HND/10476/EE	AGWU FRAKLIN, EWA	10	15	35	=	=	60	BC	PASS	

**Figure 1: Arrangement of Score Sheet**

The framework is a procedural approach towards actualization of an automated result management solution. Figure 1 is a summary of a course examined within a semester comprising course code, credit unit, course tile, examination dates and score distributions with respect to test, practical, coursework, exam, etc. Final score, Grade and Remark columns contain the result of score distribution from test score, practical and exam scores [2] as mentioned earlier. The final score column produces the limit and range from which grade column takes its decision. Grade column has a unique property included in its logic program which enables it to satisfy the condition provided for practical work. For instance, a student can make a pass mark without a practical work, but the logics of the grade column will not enable this condition. Hence, a student without practical work automatically fails, even if he/she makes a pass mark. The remark is greatly dependent on the condition of the grade column. All codes used in development of the logic are dependent on cell contents; also the program file is developed to cover a session of two semesters.

SUMMARY SHEET SAMPLE CODES: For A =SUM(W8:W92); AB =SUM(X8:X92); B =SUM(Y8:Y92); BC =SUM(Z8:Z92); C =SUM(AA8:AA92); CD =SUM(AB8:AB92); D =SUM(AC8:AC92); E =SUM(AD8:AD92); F =SUM(AE8:AE92); TOTAL =SUM(C94:C102); SUCCESS RATE=IF(AND(AF93=0,AG93=0), 0, ((AH93)/(AF93+ AG93))\*100). As shown in

93		<b>SUMMARY:</b>	
94	1	A	0
95	2	AB	0
96	3	B	4
97	4	BC	11
98	5	C	14
99	6	CD	15
100	7	D	15
101	8	E	10
102	9	F	7
103	10	<b>TOTAL</b>	<b>76</b>
104	11	<b>SUCCESS RATE (%)</b> :	90.79

**Figure 2: Course/ Subject Summary page**

Figure 2, the summary page gives the outcome of each grade level. It also contains information on the percentage of success of each course.

### **Comprehensive Sheet Development**

The comprehensive sheet is a collection of the individual score sheet grade in relation to the credit loads; the combination of which generates the Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) as shown in figure 3. To develop a comprehensive page (sheet), a clear logical relationship between the cells of the comprehensive and the score sheet must be established following a procedural approach towards developing the logics of the comprehensive sheet.

### **The Cumulative Grade Point Average**

The cumulative grade point average is a total cumulative of all the semester result of each student. Shown below are the mathematical equation and the corresponding logical program for automating the CGPA.

$$GPA = \frac{GP}{C}, \quad CGPA = \frac{\sum_{i=1}^4 GP_i}{\sum_{i=1}^4 C_i} \quad \text{where } GPA = \text{Grade Point Average, } CGPA =$$

*Cumulative Grade Point Average, C = Credit hours and  $\Sigma$  = Summation*

*IF(EG1165="NA", (R1165+EJ1165)/(SUM(D1164:N1164)+SUM(DX1164:EF1164)), (R1165+EJ1165)/(SUM(D1164:N1164)+SUM(DX1164:EG1164)))*. The cell (CGPA) outcome is an interaction between the point score cell and credit unit row. Some of the cell references depicted in this code have other chain references which cannot be fully represented here for lack of space and easy comprehension. To represent the course code, credit unit and course title; cells of the score sheet containing this information has to be referenced.

### **Other Properties of the Result System**

**Carry Over Sheet:** This is an automated page showing a comprehensive roll of students with references to one or more courses. This list is generated from the referenced cells of the comprehensive page of previous session. Any student who happens to pass the course is dropped and others carried along.

**Repeaters List:** This page is a roll of students whose CGPA is less than 1 but greater than 1.5. The generating logic emanated from the comprehensive page cells with 1.5 limits.

**Absent List:** This is a roll of students whose scores are missing from one or more score sheets.

**Withdrawal List:** This is a roll of students whose CGPA is less than 1.5. The generating logic references cell of comprehensive between 1.0 and 1.49 inclusive. This is similar to repeaters list.

### **Limitations of the Result System**

We have employed this program for the institution's result management with satisfying results. Although this program is peculiar to our institution, it conforms to National Board for Technical Education (NBTE) result management requirements. We are currently investigating the challenges of creating a synergy with the institution's web portal. The capturing system of the web portal has been designed with multiple codes involving SQL and other compatibility software while the offline version is designed strictly for Microsoft Excel, hence introducing a problem of handshake [4],[5]. To correct this, more research is being carried out to identify, isolate and solve this impeding problem towards developing an automated web-based result management system

DEPARTMENT OF ELECTRICAL/ELECTRONICS TECHNOLOGY																				
EXAMINATION SCORE/COMPREHENSIVE SHEET (HNDI)																				
SECOND SEMESTER 2010/2011 ACADEMIC SESSION																				
SN	REG. NUMBER	NAME	OPTION			POWER							REFERENCES	CGPA(2)	GPA	POINT SCORE	OTHER REMARKS			
			REEE 326	REEE 327	REEE 327	ICT 321	REEE 326	REEE 325	ENIS 413	IEEC 325	IEEC 324	IMTH 312						IEEC 302		
1165	1	2010/HND/10472/EE	AGBOEZE EJIKE, JUDE	F	A	F	B	E	D	B	E	E	F	F	4	1.58	1.76	45.75	=	=
1166	2	2010/HND/10474/EE	AGU HENRY, C.	B	C	BC	BC	BC	B	AB	D	AB	AB	B	0	2.70	3.09	80.25	=	=
1167	3	2010/HND/10476/EE	AGWU FRAKLIN, EWA	BC	BC	C	B	BC	A	AB	CD	BC	BC	B	0	2.78	3.11	80.75	=	=

Figure 3: The Comprehensive sheet.

### Conclusion

In this paper, we have outlined the development framework of a semester result solution system. This program has been applied in the management of the institution’s result management with an impressive output especially in accuracy of calculation, error reduction, time of result production and presentation after approval amongst others. Although the work is a research in progress, it is experiencing some developmental challenges in creating synergy with the institution’s web portal.

### References

Microsoft Excel: Wikipedia The free encyclopedia, [http://en.wikipedia.org/wiki/Microsoft\\_Excel](http://en.wikipedia.org/wiki/Microsoft_Excel) retrieved April 2012

Web- Portal Development Process. Retrieved from [www.roseindia.net/software-tutorials/detail/14243](http://www.roseindia.net/software-tutorials/detail/14243) retrieved April 2012

My SQL – Wikipedia, The Free encyclopedia. Retrieved from <http://en.wikipedia.org/wiki/MySQL>. retrieved April 2012

PHP My SQL introduction retrieved from [www.w3schools.com/php/php\\_mysql\\_int](http://www.w3schools.com/php/php_mysql_int). retrieved April 2012

Web Portal: Wikipedia The free encyclopedia, [http://en.wikipedia.org/wiki/web\\_portal](http://en.wikipedia.org/wiki/web_portal) retrieved April 2012.