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Using Spreadsheet for a System of Exam Scheduling

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Abstract. Exam scheduling is a challenging task. However, the spreadsheet program may shed light on pleasurable exams scheduling work. This study aims to articulate an exam scheduling system developed for a local college. The proponents of this study preferred extreme programming as a software development framework. For software quality evaluation, eight quality characteristics of SQuaRE (ISO/IEC 25010) were applied. The relevance of the said spreadsheet-based system of exam scheduling is confirmed by the professional judgment of information technology experts and the system's primary stakeholders.

Keywords: *spreadsheet, exam scheduling, extreme programming, SQuaRE*

INTRODUCTION

Exam scheduling is a challenging task. However, the spreadsheet program may shed light on pleasurable exams scheduling work. Spreadsheets are generally used as software packages for data entry, storage, analysis, and visualization (Broman, et al., 2017).

The electronic spreadsheet has also won favor among researchers owing to the flexibility it allows for entering, editing, and organizing data. Therefore, it is tremendously beneficial to develop software that takes advantage of a full-featured spreadsheet (Stromquist, 1992). This study aims to articulate an exam scheduling system developed for a local college.

METHODS

The proponents of this study preferred extreme programming as a software development framework. For software quality evaluation, eight quality characteristics of SQuaRE (ISO/IEC 25010) were applied.

Plane et al. (2013) stated that the spreadsheet application is, in fact, a powerful business tool that is popularly used by accountants. Francis et al. (2013) also supported the notion that spreadsheets are extensively used for software development.

Figure 1. *Paradigm of the Study*

The system requires personal computers that use an Excel application. The program may be stored using Google Drive for collaboration with approved users. Likewise, the study respondents used an evaluation instrument (ISO/IEC 25010), which has eight (8) software product quality features. A five-point Likert Scale (Encyclopedia Britannica, 2023) was used to rate each program's characteristics. To wit, five is the highest adjective rating (very satisfied) and the lowest is 1 (very dissatisfied).

RESULTS AND DISCUSSION

After the system development, the graphical user interface (GUI) revealed its seven (7) modules – the right wing-main building, the left wing-main building, the PAGCOR building, list-IBM exams, list-IEAS exams, list-ICSLIS exams, and the proctor control system.

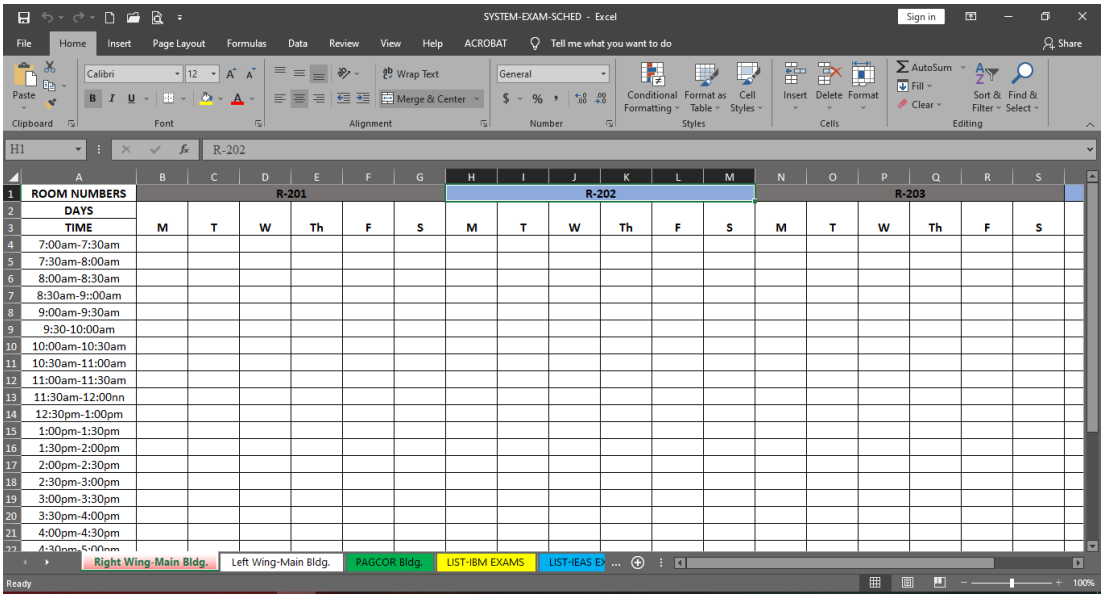

Figure 2. *Graphical User Interface of the Exam Scheduling System*

The requirements and procedures of the said system are articulated below:

Requirements:

1. List of exam subjects [per year level and section, per program].
2. List of proctors/instructors [per year level and section, per program].
3. List of examination rooms in the campus.

Procedures:

1. Save/store the system in Google Drive and share it among approved users [deans/program coordinators] for collaboration.
2. Open the sheet 'list of exam subjects'.
3. The class code, subject code, and section in the vacant day/time/room indicated in the system are plotted.
4. Encode the schedule [based on Procedure # 3] from the list of exam subjects.
5. Plot the schedule [based on procedure #4] in the 'proctor control system' sheet.
6. Repeat procedures 2 to 5: All exam subjects [per year level and section, per program] have their corresponding schedule.

Conclusions and Recommendations

The relevance of the said spreadsheet-based system of exam scheduling is confirmed by the professional judgment of information technology experts and the system's primary stakeholders. Consequently, the data in Table 1 depict the results of the survey of the five participants of the study.

Table 1. *Responses based on the Guidelines - Software Quality Requirements and Evaluation*

Quality Software Characteristics	Respondents				
	1	**2**	**3**	**4**	**5**
1	4	4	5	4	4
2	4	3	2	4	3
3	3	4	4	4	4
4	4	5	4	4	5
5	4	5	4	5	4
6	3	5	3	5	4
7	4	4	4	4	4
8	4	4	4	5	4

Based on the responses, the system obtained a mean of 4.025 (satisfactory adjective rating). Software Quality Requirements and Evaluation (SQuaRE) has eight main characteristics (functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability). Relatively low scores were attributed to performance efficiency, whereas usability and reliability had the highest scores.

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