**Research Methodology**

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SMS & EMAIL BASED RESULT ALERT SYSTEM

SMS and Email, in particular, are widely used for communication, and have lately been utilised to deliver a variety of services such as booking, banking, and other financial services. Because SMS is very simple to use, a user may quickly learn how to send SMS. The main benefit of SMS is its low cost and widespread availability, as almost everyone owns a phone. However, the difficulty of monitoring examination results persists, despite the fact that most institutions now make test results available on their websites, SMS and Email remains a faster and less expensive method of disseminating examination results and other information.

# Planning and Ideation:

In this stage, requirements from students, stakeholders, and clients were gathered. The team of developers and testers select the final requirment of the system after a comprehensive examination of the requirements acquired through surveys and interviews, taking the feasibility of the system into account. This step is necessary to bridge any existing gap between what is the mind of programmer and that of artist. A well-designed architectural framework was decided after mutual agreement between the team of developers. This is done before the coding stage because a system’s architecture sets the basis for future work and development and on it relies how well the final product will be.

# Defining Requirments

This system enables universities to provide results to students after receiving a simple SMS or email which consists student name, matric number, department, semester, and session. This approach will not only allow the administrator to quickly upload the results, but also to register the students with their personal information so that their results could be sent online through email or SMS wothout any hassle.

# Designing

The team of developers, art director, and project manager produced a collaborative document. The document finalized the UI Interface as flow charts, buttons, pop-up messages, alerts, animations, theme, error handling messages. It finalized the tools and languages used which are: PHP that is used to develop web pages with CSS, and Java Script for validation and sever side scripting. The system can be accessed using GSM, the system will transfer signal for notification to user through GSM and SMS Gateway where the notification email will send to user through internet and mail server. This stage was achieved by following agile methodology of software development with some parts being done in incremental model. However, this stage only finalized the system on paper and in theory but not in implementation.

# Implementation and Testing

Implememtation of the system is the second-most, if not most, crucial part of software development life cycle. The team of coders on the project worked on OOP paradigm of coding while utilizing abstraction, and polymorphism to the maximum. The prototype system has a desktop module, when the admin signs in, he has the options to edit, add, and delete a studen. In addition, he can make another sub administrator who can utilize the usefulness of the framework. The sub administrator is not capable of making another sub administrator account. The administrator can send and answer understudy questions by sending them their particular outcomes.

* **Unit Testing:**

Each and every element that makes up the product is tried during the unit testing. It was done as the system was being implemented and developed. The test information was delivered to each module in every way possible, and the results were perfect. Every module has been tested and proven to function properly.

* **Integration Testing:**

All of the code modules were independently tested in this process. It is a collection of pages since the software is developed using PHP and JavaScript. As a result, each page was evaluated with multiple sets of input values and various combinations of inputs that were out of range. It was discovered that all of the module's components are in great functioning order.

* **Final Testing:**

This included testing the complete system, including all forms, code, modules, and class modules. Black Box testing allows a software engineer to create sets of input circumstances that completely exercise all of a program's functional requirements. All the combined modules were given the test data. The combined module works successfully without any side effect.

Testing was an iterative process in which all individual testing phases were repeated until the system was bug-free. The document of testing produced identified the following:

* Bugs encountered
* How did the bug occur?
* Frequency: How frequently did the bug occur?
* Clips and screenshots of the test case in which bug is encountered
* Module, function, and level associated with the bug

The document was reported to the developers who worked on the code again to fix the afore-mentioned bugs in the document.

# Deployment

This system was deployed in different educational institutues to verify its usefulness in real-life settings after removing all probable errors and defects observed in the user environment.