#### SCHOOL MANAGEMENT SYSTEM

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### Acknowledgment

### Background information

This is not the first school management system to have been developed, out there are many such systems. Some are online based, created using php, c#, Java etc. Almost every school out there has got a system, however, those system are not fast, efficient and secure. Many especially the standalone ones are very inefficient because one can’t work from far and they are not distributed. All these problems and many others are solved by this system.

This is an online school management system, unlike other school management systems that are standalone applications (Desktop applications)

Why online? The current technology is shifting to online. There are many advantages of online systems. One being the fact that users’ mobility is not limited. Users can work from anywhere.

Why Java? Java is secure and robust.

### The proposed system

Benefits

1. Teachers can do their work form the comfort of their houses, such tasks include uploading results.
2. School account clerks don’t have to travel to the school premises to do petty tasks like checking student fee balance.
3. Secretaries don’t have to travel to the school to register a new student.
4. Parents don’t have to worry about their children performance anymore as the results will be sent to their email address as soon as exams are done.
5. The administration done have to worry about how to reach parents because the system will be able to send message to parents informing them of the upcoming events.

* Here, the school will be required purchase a mask or a short code from MNOs (Mobile Network Operators) or any MPRSPs (Mobile Premium Rate Service Providers), this will be used for communicating to parents via SMS (Short Message Service).
* On the other hand, the school will also be required to have a secure SMTP (Simple Mail Transfer Protocol) for the purpose of sending emails.
* Since this product is designed to manage many schools (a school will have an account). The cost for running an account will be significantly low. Otherwise if a school opts to buy this product, it will incur more cost for hosting on top of the product cost.

### Business logics

The system will do the above mentioned tasks plus the obvious ones. Such obvious tasks include examination result processing, student management, staff management, petty cash management etc.

### The root user

The super user is the principal, when a school account is created, the principal is the first user to be registered, he/she will intern register other users. The principal will be required to change their default username and password. Also, other users will be able to edit their profile if need be.

### The Core Business logic

### Examination result processing.

1. A student is assigned some subjects, and a class room.
2. A teacher is assigned a class room.
3. Then a class sits for exam. A class is made up of a group of students.
4. Teachers are grouped into either,
5. Class teachers,
6. Non-class teachers,
7. Head of departments ,
8. Curriculum masters ,
9. Deputy principal and
10. The principal.

The Class teachers

They belong to a specific stream, each stream has a class code. Example; FORM 1 N, FORM 2 W etc. On the other hand, classes can be either a FORM 1, a FORM 2, a FORM 3 or a FORM 4. There is no teacher responsible for these four categories.

On login, only class teachers can view results for a particular stream. Here the class teacher can view and print the performance for his/her class. These results includes the student performance and the class performance.

The teacher will also have access to exam upload panel, here exam results will only be submitted to the system via a file. The file will be saved as subjectcode.classcode.examcode.csv and the content will be in two columns, the admission number and score, separated with a delimiter comma.

The results for either FORM 1, 2 bra bra … will be accessible via the reports panel. Here only the CM, the principal and the deputy principal can view and print the results. The results includes the student performance and the class performance. Here the performance is for all the streams combined, i.e. if the class in question is FORM 1, then the performance is for the all FORM 1 streams. So a student who was position 1 in a particular stream might find him/herself in position 10 or whatever position.

### Students and Users’ management

A student, a user and a school have a status, either active or inactive, only inactive user can use the system. Similarly only active students can be viewed. Inactive school account is inaccessible.

When a user or student is deleted, they only become inactive. Actual deleting of students is possible after 5 years of students’ inactivity. This will be done by a scheduler. Users and school accounts can be deleted permanently by the admin and it’s after (maybe a court directive.)

### School account resources

Any account will be required to upload some few items like school logo and digital signature

### Teachers

Their main work is exam management, a teacher uploads his/her exam results.

### Class teacher

View and or print his/her stream exam results

### HOD/CM

View and or print class result, for example, can print results for the whole form 1 classes.

### Deputy Principal

Can do everything a principal can do except deleting users

### The secretary

### Student management

Registration

This is mostly the work of a secretary, it include registration. Details captured:

1. Student basic details ,
2. Student primary school details,
3. Student guardian/parent details,
4. Student sponsor details

Allocation and role assignment

1. Student is allocated a house plus classroom and subjects.
2. Other roles like prefects, clubs etc. are also registered in the system by the secretary as a directive from relevant authorities.

### Account clerk/ bursar

He/she handle matters relating with cash, that is, maybe pocket money, fees and petty cashes.

For pocket money

A student opens an account with the school and deposit the pocket money which can be withdrawn anytime.

For fee

The system will integrate banks APIs(Application Programming Interface) to enable monitoring of the students fees, here balanced can be checked and statement generated.

### The principal

He/she will consult our the system admin, then provide his/her school details, such include school name, desired school username and password, school email, school phone number, school logo and digital signature. Having provided the above information, the account will be created. Here the admin will create an account for the principal too, that is, staff username (Principals username) then principal’s password (staff password), will all that a principal can login to his/her school and add other users. The users will then login.

He/she makes the payments for using the product, this is done every term.

### Other logics

The system will also incorporate other users like the librarian, store keepers, lab technicians’ etc. The system will also have time table generators, school resources manager- i.e. school assets etc.

Ability to generate exam paper.

### Coding and programming tools

### Coding

The system is based on JavaEE (Enterprise Edition), using MVC (Model, Controller View) model. A lot of java server pages (jsp) a written plus servlets containers and other java classes like POJOS (Plain Old Java Objects) and DAOs (Data Access Objects) .On the view, cascading style sheet, java Scripts libraries and some html are used for Designing the UI. On top, some more files are still included, these are the deployment descriptors (web.xml), configuration file, build.property file, log configuration file, scheduler configuration file, cache configuration file and database initialization files. All these are properly groped and put in various directories within the programming machine. Such directories include

1. Web for the java server pages and the deployment descriptors
2. src for Java codes
3. etc for persistence management , this has cache files, database files , schedulers and configuration files
4. the root directory is the webapp which contain build.property file used for deployment

### Programming tools

1. Subversion, this tool is used for version control, in this project I have used github as a repository.
2. Apache ant, this tool is for deployment. It is more efficient than IDEs (Integrated Development Environment).
3. Wildfly (JBOSS), this is a server
4. Postgres, this is a database Management System (RDMS)
5. Eclipse IDE for Java coding and testing
6. Netbeans IDE for Jsp coding
7. Linux Operating System

### Server Requirement

Fast machine with at least 4GB RAM and at least 500GB HDD running UNIX based OS

### User Requirement

A web browser that can support java script

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