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DEVELOPMENT OF AN EVALUATION BILL MANAGEMENT SYSTEM, WITH REFERENCE TO J&K STATE BOARD OF TECHNICAL EDUCATION

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Abstract: The basic and primary responsibility of an examination board is the evaluation of answer scripts of the candidates and for the evaluation purpose, qualified human resource is required and then they are being incentivized for their work by the process of remuneration. Given the number of answer scripts that are being evaluated by an examination board, the billing part of the board becomes very critical and its automation is the key as the manual processes makes the system very difficult to manage and is prone to errors. The automation makes the system efficient and reliable both in terms of cost and time.

Keywords – *The Jammu and Kashmir State Board of Technical Education (JKSBOTE); Data base; Automation System, Bill Management System*

I INTRODUCTION

The Jammu and Kashmir State Board of Technical Education (JKSBOTE) came into being as an individual entity under the Directorate of Technical Education in 1981. It has now been transformed into an autonomous body by an Act of 2002, of the J&K State Legislature. The volume of the work of the JKSBOTE has increased manifold over the years with the increase in the number of courses offered by the Polytechnics and also the increase in the number of Institutions/Seats.

One among the main primary works of the board is to evaluate the answer scripts. The evaluation process starts with the collection of answer scripts from the different examination centers across the state. The answer scripts are stored in the secrecy section of the board and in board they are being mixed and coded in order to ensure fair evaluation process. The answer scripts are managed by creating packets with each packet being given a unique identification number. The size of the packet (number of answer scripts in a packet) is limited to fifty (50) for proper identification and storing purpose.

The packets are then given to different evaluators for

evaluation and randomly the process is being duplicated for certain packets in each programme by giving the packets to head examiners to ensure fair evaluation. The role of checkers then is to recheck the answer script for any unevaluated question in answer script besides finding any counting discrepancy.

Earlier the entire system of Evaluation Management used to be manual and every evaluator/checker had to keep a record at his/her place to claim the remuneration charges later on and at the boards end, manual registers would be maintained for recording the same and then the bills amounting to 1000s of pages would be processed one by one for any discrepancy, then only the payment could be released and the entire process of bill verification and payment would take few months to complete.

The project was designed and developed with an aim to eliminate the manual record keeping besides increasing the efficiency of the system in terms of cost and also removing duplications if any and also ensuring all bills are processed in go.

Methodology

The entire billing system was designed on the concept of Model View Controller with due emphasis on each component.

II THE MODEL PART OF BILL MANAGEMENT SYSTEM

The Model Part of the Bill Management System consists of the database design and a relational model was used for its development. The database language used to create and manage the backend database was MS SQL because of its durability and transactional property.

The ER Model of the Bill Management System is as shown in Fig-1.

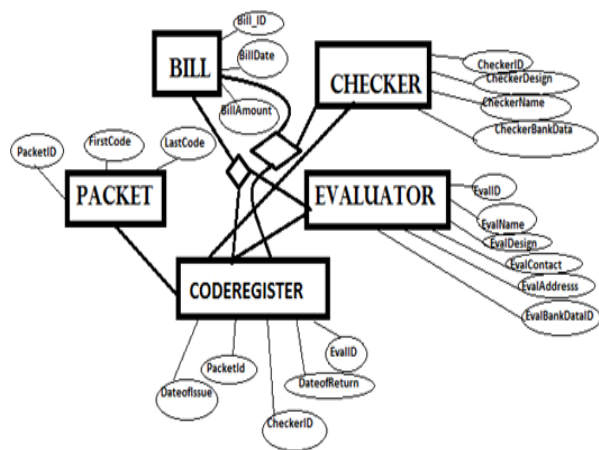


Figure 1: ER Model of Bill Management System

The various entities used in the system are as:

- Packet:** This entity is used for the basic details of the packet, the packetID, a unique ID generated at the time of creation of the packet. The FirstCode and LastCode of this packet indicate all the codes which are part of this packet. It is to mention here that packet has all the codes in between the first and last code.
- CodeRegister:** This entity is used to store the data related to the evaluators in relation to the packets issued to them. Also the checker data is also stored here only. Besides due to its separation from Packet table, it can contain multiple rows regarding the same packet in order to meet out the requirement of multiple evaluations for some packets.
- Checker:** The basic details regarding the checker are stored in this table.
- Evaluator:** The basic complete details are stored in this relation.
- Bill:** It is that kind of relation in which the data pertaining to various bills of evaluators and checkers is stored.

The Controller Part of Bill Management System:

The Controller part of the system handles the various kinds of operations that need to be performed viz-a-viz to the backend database and front end interface. The entire scripting of the controller is done in PHP and different kinds of handlers are used for various kinds of operations. The MSSQL database queries are embedded in PHP only and are executed in the database server through special functions like `sql_srv_conn` and `sql_srv_query` etc. from the PHP server

only by creating proper connections and exchanging messages from each other. The ODBC packages for SQL are used for communication between web server & database server.

The various kinds of handlers that have been used in the bill management part are:

1. Handlers related to a Packet:

- Packet Creation Handler:** This is used for creation of a new Packet by generating a unique ID to the Packet at run time and getting packet information like subject, programme etc., first code, last code from the user end through the interface provided to the user.
- Packet Updation Handler:** It is used to update the value of various status variables of the packet during its processing. The Packet can be in the stages like 'NotAssignedEvaluator', 'InEvaluation', 'EvaluatedbutNotChecked', 'Checked', 'Entered', 'Decoded', and 'Finalized' during its life time and appropriate handlers have been created to ensure the transition of a packet from one state to another state.

2. Handlers related to Users:

- Evaluator Creator/Updater Handler:** This part of the system deals with creation of evaluators by creating their profiles. Once a profile of an evaluator is created, he/she logs in to the system to check about the packets that have been assigned to him/her and can update his/her details including the bank details.
- Checker Creator/Updater Handler:** They are just like evaluator handlers with just the difference in role.

3. Handlers related to Bill:

- Bill Generator Handler:** This Handler is an important part of the entire system of billing. This part deals with the creation of individual bills for each user viz Evaluator, Checker and Head Examiner. The remuneration rates are different for different types of users and certain conditions like a fixed minimum amount for a packet if the amount as per rate becomes less than the fixed minimum, e.g. Currently the min amount is set at Rs 100/- per packet for an evaluator and Rs 13 per sheet otherwise. Besides Conveyance Charges are calculated for the users which is based on the number of days calculated on the basis of Date of Issue and also subject to minimum of 40 papers per day.

The View Part of Bill Management System:

This part of the system deals with interface development and a final product in the form of a verified Consolidated Bill & System Generated Payment Authority Letter for bank both in excel and pdf versions. The interfaces have been developed in HTML, JavaScript & CSS has been extensively used for styling of pages. The various interfaces developed include interface for adding user, adding packet & generating Bill

e-PORTAL
WELCOME DEPUTY REGISTRAR DREGJ @JKSBOTE

EVALUATION MANAGEMENT--ADD

SELECT INSTITUE: JKSBOTE

USER TYPE : EVALUATOR OPERATOR DECODER

NAME :

PASSWORD:

CONFIRM PASSWORD

DESIGNATION:

CONTACT: +91-

Figure 2: Interface for adding a new user

e-PORTAL
WELCOME DEPUTY REGISTRAR DREGJ @JKSBOTE

ASSIGNMENT TO EVALUATORS

SELECT EVALUATOR: EVAL1 (MUDASIR AZIZ-)

SEMESTER: 6

PROGRAMME: ---Select Programme---

SUBJECT ---Select Subject---

ANSWER SCRIPT CODE RANGE:

FIRST::

LAST :: Last Code should be greater or equal to First

DATE OF ASSIGNING: 27/01/2018

Figure 3: Interface for adding a packet

**JAMMU AND KASHMIR
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e-PORTAL
WELCOME DEPUTY REGISTRAR DREGJ @JKSBOTE

EVALUATOR BILL GENERATION

SESSION: ND16

Select Evaluator: ALL

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LOG OUT

Designed, Developed and Maintained by Shakeel Ahmad

ALL

- EVAL1 (MUDASIR AZIZ)
- EVAL10 (MEHRAJ UD DIN TELI)
- EVAL100 (SHAHID KHOWAJA)
- EVAL101 (RAFIQ AHMAD)
- EVAL102 (TASHI KINAH)
- EVAL103 (MOHAMMAD ARIF)
- EVAL104 (SAJAD AHMAD KHAN)
- EVAL105 (KAWSHENA NABI)
- EVAL106 (MARIYA)
- EVAL107 (MUNIR AH MIR)
- EVAL108 (Imroq ahmad tantray)
- EVAL109 (shabir ahmad mir)
- EVAL11 (Hemmera Gul Hamdani)
- EVAL110 (Beehish Yasin)
- EVAL111 (RIYAZ AHMAD DAR)
- EVAL112 (rafiq ahmad amarsingh)
- EVAL113 (GAMMU)
- EVAL114 (BASIT RIYAZ)
- EVAL115 (MR. UMER)

Figure 4: Interface for Generating Bill

The Sample Bill (Final Product) Produced from the Bill Management is as shown in Figure 5.

124	EVAL136	Asstt. Prof	JKSBO	1	11	143	0	143
125	EVAL137	Asstt. Prof	JKSBO	1	50	650	100	750
126	EVAL138	Asstt. Prof	JKSBO	0	0	0	0	0
127	EVAL139	Lecturer	JKSBO	0	0	0	0	0
128	EVAL140	IRER IN KGP	JKSBO	6	239	3107	500	3607
129	EVAL141	LECTURER S.S.M	JKSBO	4	199	2587	400	2987
130	EVAL142	LECTURER	JKSBO	25	267	4398	600	4998
131	EVAL143	Lecturer KGP	JKSBO	12	372	4941	900	5841
132	EVAL144	Lecturer IUST	JKSBO	17	680	8901	1700	10601
133	EVAL145	DEPUTY REGISTRAR	JKSBO	2	12	200	0	200
134	EVAL146	KGP	JKSBO	1	1	100	0	100
135	EVAL147	LECTURER GWP	JKSBO	0	0	0	0	0
136	EVAL148	LECTURER GWP	JKSBO	7	101	1444	200	1644
137	EVAL149	GWP KULGAM	JKSBO	13	636	8268	1500	9768
138	EVAL150	Lecturer Boys Higher Secondary Charari Sharief	JKSBO	20	1000	13000	2500	15500
139	EVAL151	Lecturer Girls Higher Secondary Nagam	JKSBO	20	951	12363	2300	14663
140	EVAL160	LECTURER	JKSBO	5	250	3250	600	3850
141	EVAL162	LECTURER	JKSBO	2	100	1300	200	1500
142	EVAL167	LECTURER	JKSBO	2	100	1300	200	1500
143	EVAL168	LECTURER	JKSBO	4	17	430	0	430
144	EVAL155	LECTURER	JKSBO	1	50	650	100	750
145	EVAL156	LECTURER	JKSBO	5	250	3250	600	3850

**NAME
(erased)**

Figure 5: Sample Bill Produced from the Bill Management

III CONCLUSION

In this paper billing system through Automated ER model of Bill Management System was implemented. Some of the concepts of security and Automation have been applied in this system to protect the system from unauthorized access. This system increases productivity. The implementation of the proposed system will go a long way in improving the evaluator service in the utilities.

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