



International Journal of Engineering, Business and Enterprise Applications (IJEBA)

www.iasir.net

Online Examination Application using SAP ABAP

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Abstract: Online Examination Application is a software solution which allows particular company or institute to arrange, conduct and manage the examination via an online environment, this can be done through, internet, intranet or LAN. The manual procedure used for conducting the exam is a time consuming process and error prone due to human limitations. It is an SAP based web application for conducting examinations through internet or intranet (with in Organizations) for candidates.

Keywords: LAN, SAP, ERP, OEA, ABAP

I. Introduction

Online Examination Application (OEA) is a Multiple Choice Questions (MCQ) based examination system that provides an easy to use environment for both Test Conductors and Students appearing for Examination. The main objective of OEA is to provide all the features that an Examination System must have. It is an SAP based web application for conducting examinations through internet or intranet (with in Organizations) for candidates. Candidates are given limited time to answer the questions and after the time expiry the paper disables automatically and the answers are sent to the examiner. The examiner will evaluate the answer through automatic process and the result will be sent to the candidate or made available on the website.

II. Theoretical Framework

A. About SAP

SAP is the world leader in enterprise applications in terms of software and software-related service revenue. Based on market capitalization, we are the world's third largest independent software manufacturer. In 1972, five entrepreneurs had a vision for the business potential of technology. With one customer and a handful of employees, SAP set out on a path that would not only transform the world of information technology, but also forever alter the way companies do business. Now 41 years and 251,000 customers stronger, we're just getting started. Building on a track record of innovation and a vision proven true throughout every economic and IT shift, now more than ever, SAP is fueled by the pioneering spirit that inspired its founders to continually transform the IT industry. [1]

B. About ABAP

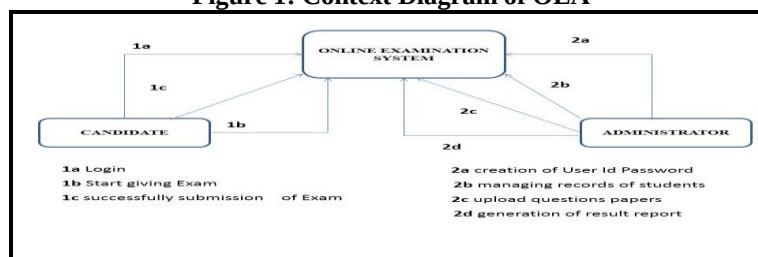
ABAP is one of the many application-specific fourth-generation languages (4GLs) first developed in the 1980s. It was originally the report language for SAP R/2, a platform that enabled large corporations to build mainframe business applications for materials management and financial and management accounting. ABAP used to be an abbreviation of *Allgemeiner Berichts Aufbereitungs Prozessor*, German for "generic report preparation processor", but was later renamed to the English **Advanced Business Application Programming**. ABAP was one of the first languages to include the concept of *Logical Databases* (LDBs), which provides a high level of abstraction from the basic database level(s). The ABAP language was originally used by developers to develop the SAP R/3 platform. It was also intended to be used by SAP customers to enhance SAP applications – customers can develop custom reports and interfaces with ABAP programming. The language is fairly easy to learn for programmers, but it is not a tool for direct use by non-programmers. Knowledge of relational database design and preferably also of object-oriented concepts is necessary to create ABAP programs.

III. System Design

A. Context Diagram

The context diagram is a top-level view of an information system that shows the boundaries and scope. It describes the main objective of the system and the entities involved.

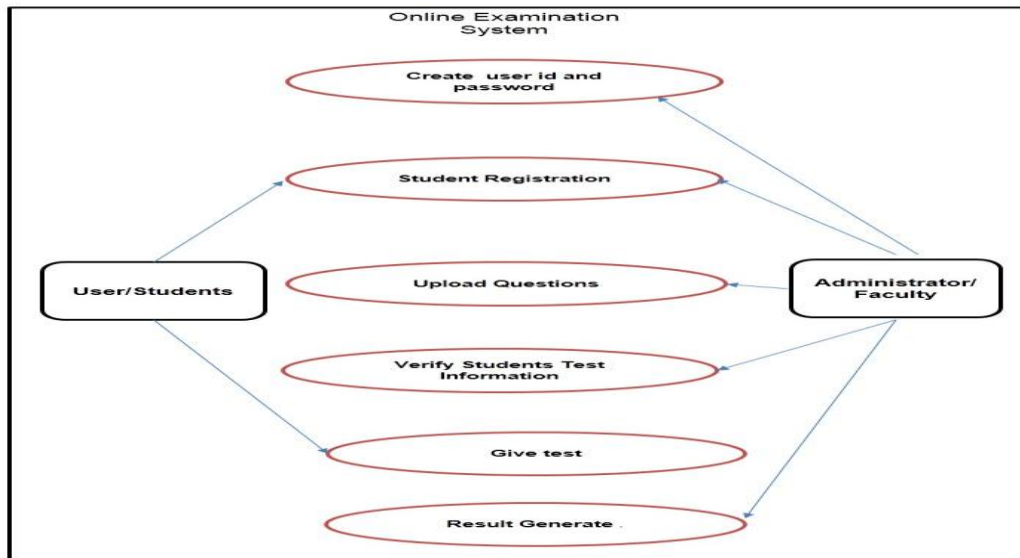
Figure 1: Context Diagram of OEA



B. Use Case Diagram

The Use Case Diagram capture the dynamic aspect of the system also shows the functional requirement of the system of OEA.

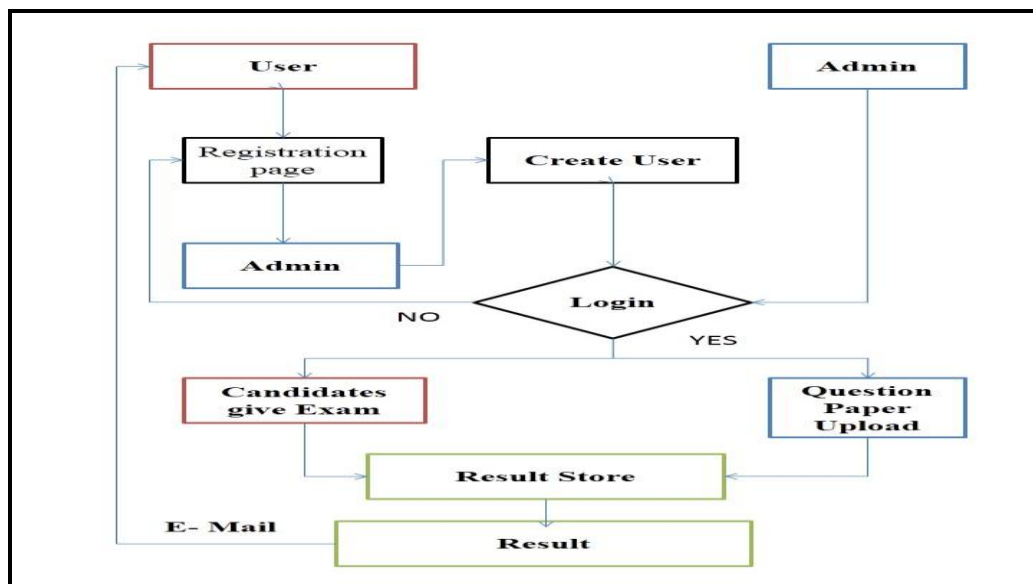
Figure 2: Use Case Diagram of OEA



C. Process Flow Diagram

The Process Flow Diagram is also known as System Flow Diagram. The main reason for using PFD is to show the relation between major parts of the system. [3]

Figure 3: Process Flow Diagram of OEA



IV. Functioning Of OEA

The Online Examination is a web based application developed using the ABAP language and utilizes SAP as its platform. The application is responsible for testing the performance of the students where they are required to answer in a pre-specified time limit. The students are required to initially register themselves before taking the test. Only the students who have registered themselves will be allowed take up the test wherein their basic details like the email id, name, address and the contact number is asked. There by every registered candidate is provided with a unique login id and password with the help of which he can take up the project. The end of the test is marked by the termination of the timer which navigates the candidate out of the test screen and hence saves the result of the candidates of which they are informed later. The whole Online Examination is divided into four modules.

A. Registration Module

The registration page of the testing application looks as demonstrated in the screenshot. It is here that the candidate is required to register himself by providing all the asked information. For a successful registration, the student is required to follow the following checks.

- There should be no special character in the email id field.
- There should be no alpha numeric character in first name field of student.
- There should be no alpha numeric character in last name field of student.
- There should be no special character in the address of the student.
- There should be no alpha numeric character in city field.
- The age of the student appearing for the exam should not be less than 18 years and more than 50 years & it should be in between 1950 and 1995.
- There should be only numeric characters in Contact Number & Pin code field.

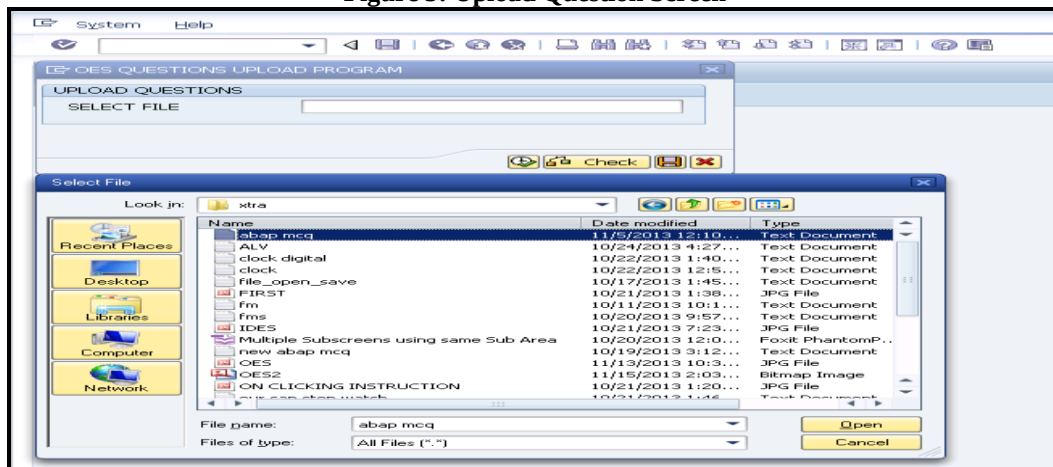
Figure 4: Registration Page

After entering all the details, the candidate has to execute the program, it will verify all the checks, if all the checks are followed properly, message for successful registration will come.

B. Upload Questions Module

In below screen, by clicking select file field, it will ask for delimited text containing questions with answer which can be stored on your system or any removable drives. After selecting the file, a message will pop up confirming the upload of questions successfully.

Figure 5: Upload Question Screen



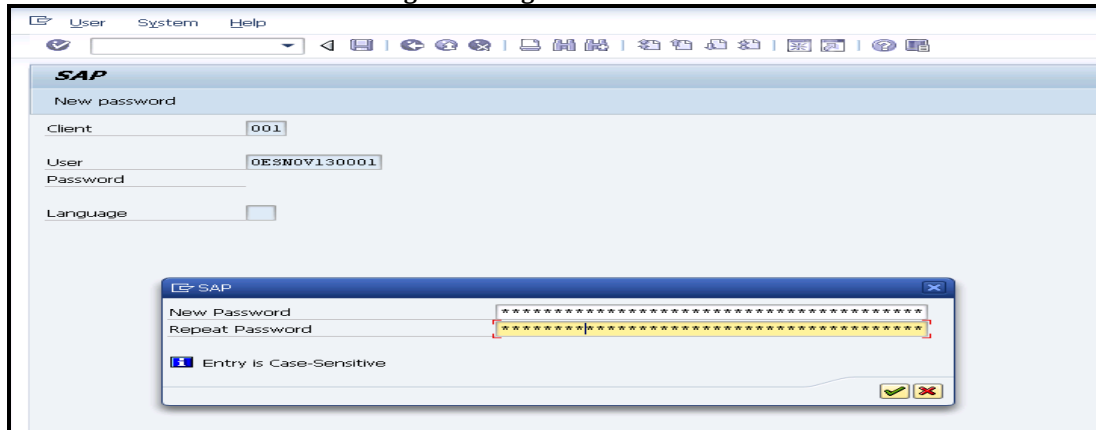
After successful upload, questions will be uploaded in a table which will contain the data from a delimited text file.

C. Examination Module

Working of examination module can be explained in following steps:

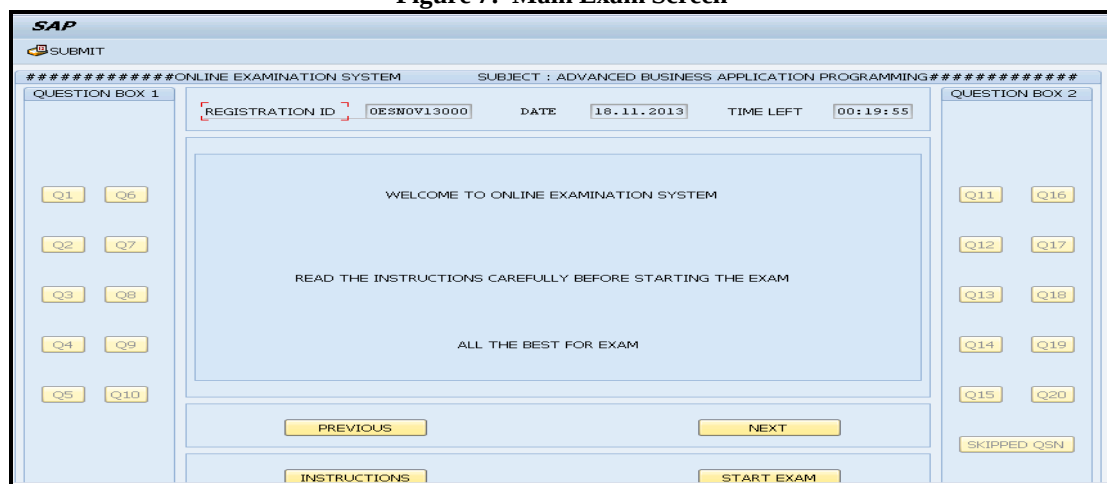
For giving the exam, first of all candidates have to Login in the test by User Name and Password which is created by administrator for him/her.

Figure 6: Login Screen of OEA



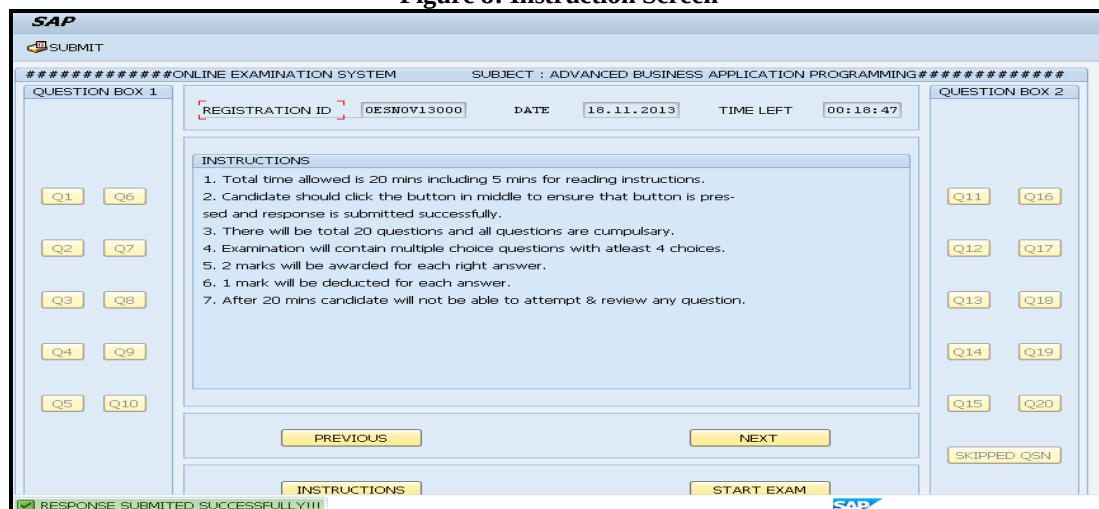
After successful login, main screen for OEA will appear. The information about candidate registration id, date of exam and time left for test will appear on top of screen.

Figure 7: Main Exam Screen



As soon as the student will enter this page, the timer will start. The time duration of exam will be 20 minutes including the time for reading the instructions. On clicking at the instructions button we have the instructions window which demonstrates the instructions to be followed while taking up the test.

Figure 8: Instruction Screen



On clicking on the Start Exam button the candidate can start taking up the exam. Once the start button has been clicked it becomes disabled, meaning that it cannot be clicked again during the entire testing procedure.

Figure 9: Exam Start Screen

SAP

SUBMIT

*****ONLINE EXAMINATION SYSTEM***** SUBJECT : ADVANCED BUSINESS APPLICATION PROGRAMMING*****

QUESTION BOX 1

REGISTRATION ID : 0ESN0V13000 DATE : 18.11.2013 TIME LEFT : 00:17:51

QUESTION 1

Full Buffering would be appropriate for ?

☐ A Transaction Tables

☐ B Small Static tables

☐ C Internal Tables

☐ D Tables with generic Keys

☒ E Skip question

QUESTION BOX 2

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20

PREVIOUS NEXT

INSTRUCTIONS START EXAM

RESPONSE SUBMITTED SUCCESSFULLY!!!

The figure above shows the disabled start exam button which signifies that the test has started and now cannot be re-started again. Also the second pointer shows the timer clock which works in a decremting trend. Once the timer gets terminated, then the candidate is navigated out of the test window. The figure above also shows the first question that appeared on the test window. After the next question button has been clicked, then it is seen that the question number has been highlighted signifying that the question either has been answered or has been left unanswered. In any question the candidate has the option of jumping back from the current question to any of the previously attempted or viewed question.

The figure below thus shows the highlighted question as Q1 after the first question has been answered by the candidate. However, there is no such provision where the candidate can switch to any of the unanswered questions from the current question i.e. the non-highlighted question cannot be jumped to from any of the highlighted ones.

Figure 10: Highlighted question screen

SAP

SUBMIT

*****ONLINE EXAMINATION SYSTEM***** SUBJECT : ADVANCED BUSINESS APPLICATION PROGRAMMING*****

QUESTION BOX 1

REGISTRATION ID : 0ESN0V13000 DATE : 18.11.2013 TIME LEFT : 00:16:34

QUESTION 2

What is the basic object of data Dictionary ?

☐ A Domains

☐ B Documentation

☐ C Data Model

☐ D Dynpro

☒ E Skip Question

QUESTION BOX 2

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20

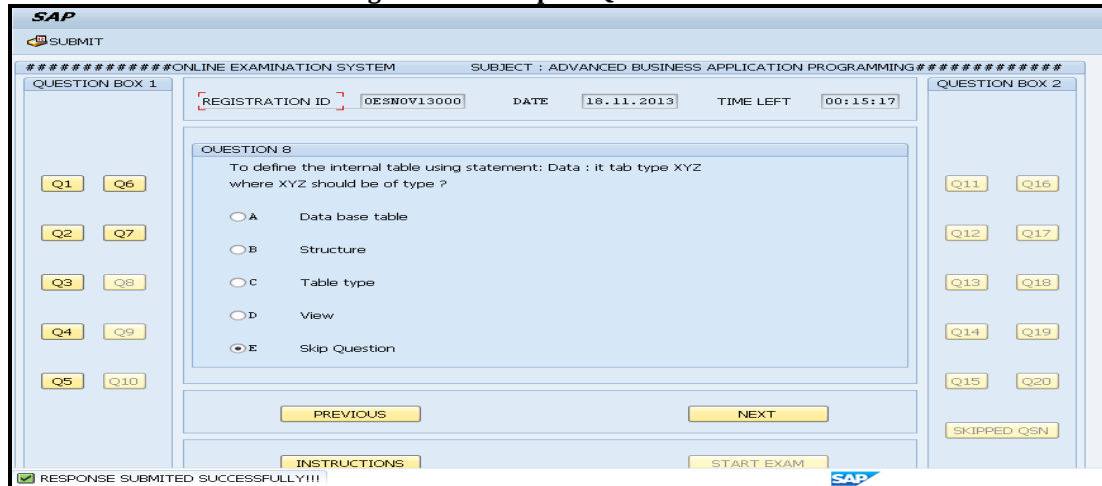
PREVIOUS NEXT

INSTRUCTIONS START EXAM

RESPONSE SUBMITTED SUCCESSFULLY!!!

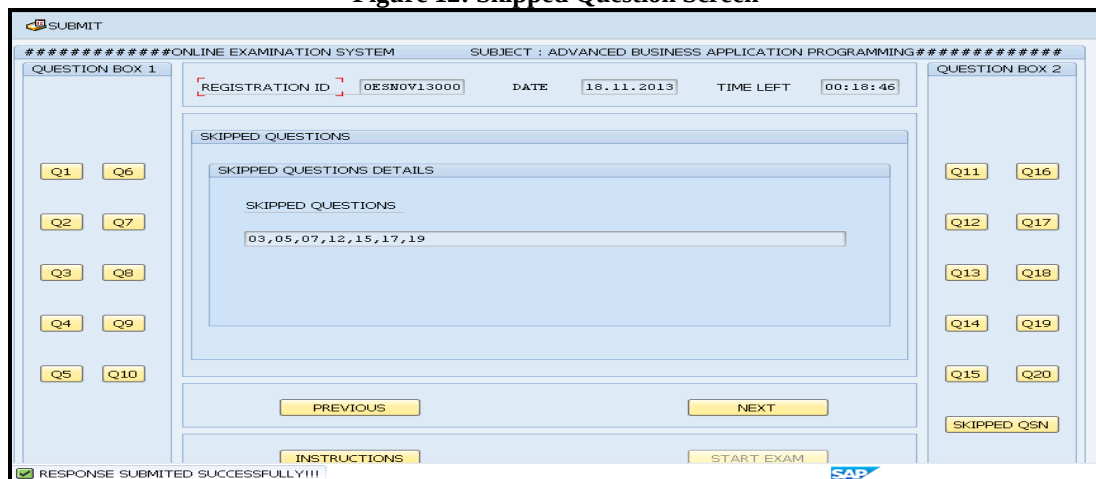
The figure below shows that attempt or viewed questions are getting highlighted one by one.

Figure 11: Attempted Question screen



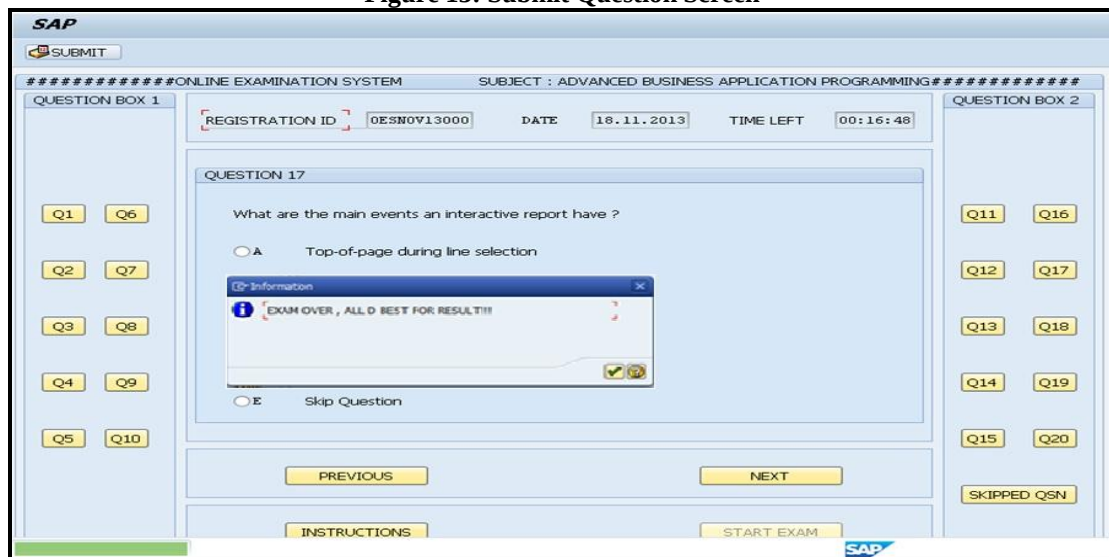
The figure below shows the screen which shows the number of questions that are being skipped by the candidate during the course of the exam, Candidate can go to those questions directly and answer them.

Figure 12: Skipped Question Screen



The figure below shows the submit button which the candidate can click on to after taking up the test. Clicking on this button ends up the test and a message for the same is displayed.

Figure 13: Submit Question Screen



D. Result Generation Module

By executing the result program, we can display the result of candidates who appeared for exam. The result for the candidate will be displayed on screen & pdf file containing the result of Candidate will also be generated side by side.

Figure 14: Result Generation Screen

The screenshot shows a SAP program window titled 'OES RESULT'. Inside, there is a section 'DISPLAY EXAMINATION RESULT' with three input fields: 'REGISTRATION ID' containing 'OESNOV130001', 'LOCATION OF FILE TO BE SAVED' containing 'RESULT0001.pdf', and 'EXAMINATION DATE' containing '18.11.2013' with a calendar icon.

After giving all details, Print ALV screen will appear in which we give name of the output device. We are using LP01, which is the default output device of SAP. Result of candidates will be shown as below.

Figure 15: OEA Candidate Result generation

The screenshot shows a table titled 'ONLINE EXAMINATION RESULT' with the following data:

QUESTION	ORIGINAL ANSWER	ANSWER ATTEMPTED
1	A	A
2	B	B
3	B	B
4	B	B
5	A	A
6	B	B
7	D	A
8	C	B
9	D	D
10	A	A
11	C	C
12	C	C
13	D	D
14	C	C
15	B	C
16	A	B
17	A	C
18	C	C
19	B	B
20	B	B

Below the table, it says '15.276 bytes transferred'.

Figure 16: OEA Generated pdf Result file

The screenshot shows a PDF version of the 'ONLINE EXAMINATION RESULT' table. The data is identical to the one in Figure 15.

QUESTION	ORIGINAL ANSWER	ANSWER ATTEMPTED
1	B	A
2	A	A
3	B	B
4	B	B
5	A	A
6	B	B
7	D	A
8	C	B
9	D	D
10	A	A
11	C	C
12	C	C
13	D	D
14	C	C
15	B	C
16	A	B
17	A	C
18	C	C
19	B	B
20	B	B

III. Conclusion

The On line test System is developed using SAP ABAP fully meets the objectives of the system for which it has been developed. The system has reached a steady state where almost all possible bugs have been eliminated. The

system is operated at a high level of efficiency and all the teachers and user associated with the system understands its advantage. The system solves the overhead associated with manual type of examination.

IV. References

- [1] <http://global36.sap.com/corporate-en/our-company/history/index.epx>
- [2] <http://www.saphub.com/abap-tutorial/>
- [3] <http://www.edrawsoft.com/Process-Flowcharts.php>

IV. Acknowledgments

We would like to thank all the faculty members of School of Management CDAC-Noida for sharing their knowledge and experiences towards completion of this project. Without their constant feedbacks this project would have been a distant reality. Our sincere gratitude is to Ms. Mary Jacintha (HOD, school of Management) and all the faculty members for supporting us.