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APPLY ON-LINE SYSTEM FOR STATE EMPLOYMENT

System Description

e-Gov IMPACT Project

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Introduction

The Apply-on-line System will provide on-line submission of job applications to the Civil Servants Agency, responsible for execution of the employment procedure within the State Administration institutions.

The Apply-on-line system will cover automatic processing of all tasks performed by the Civil Servants Agency regarding the process of employment. Starting from creation of job announcements and finishing with the submission of range list of best candidates, the system will include all necessary features (administrative selection, testing and evaluation) for execution of an efficient, time and cost saving and transparent employment process.

1. PLAYERS

1.1. Civil Servants Agency (Application Host)

According to the Civil Servants Law, the Civil Servants Agency is responsible for organizing and performing all new employments within the State Administration. The Civil Servants Agency can be defined as a “filter” which in a harmonised way conducts the process of employment of all civil servants.

The Civil Servants Agency will operate, maintain and manage the Apply-on-line System.

1.2. Applicants

Direct on-line application form shall be provided so every citizen interested in getting a job within the State Administration will be able to access it anywhere at any time and become potential candidate for the respective post announced.

2. OVERVIEW

2.1. Job announcement

After the Civil Servants Agency receives the request, its team organizes and initiates the employment procedure.

The job announcement is published in two daily newspapers. It contains all general and special requirements and conditions that should be met by the potential candidates.

The application form can be acquired/downloaded at the address/web site stated in the job announcement.

All applicants fill-in and submit (by mail or on-line) the application form to the Civil Servants Agency.

2.2. Administrative selection

After all applications are received, the Civil Servants Agency is responsible for reviewing all applications in order to verify the validity of the same and to make the administrative selection of the candidates who meet the requirements for the respective job. Every candidate that meets the requirements will be invited to testing.

2.3. Testing

The Civil Servants Agency is responsible for organizing the testing.

The testing is divided in three sections: general, special and practical.

General and special sections of the testing are conducted by the “multiple choice” method (only one correct answer).

The practical testing refers to evaluation of the computer skills of the candidates.

The Civil Servants Agency must inform each candidate of the result 8 days at latest after the exam is conducted.

2.4 Evaluation of candidates

After testing prescribed by the legislation is conducted, the Civil Servants Agency prepares a list of maximum 5 best candidates. If there are more than 5 candidates with best scores, all shall be placed on the list.

The candidates are ranged according to the points gained at testing and to the points gained through the average score acquired with the formal education.

The list is then submitted to the respective state administration institution for further selection of candidates.

The State Administration Institution is obliged to invite all listed candidates to an interview.

3. ICT INFRASTRUCTURE

The Civil Servants Agency is well equipped with Hardware and Software necessary for their every day operation.

The Civil Servants Agency uses:

- MS Windows 2000 server, MS Windows 2003 server
- MS SQL 2000 (the database on cluster)
- Crystal Analysis Enterprise Edition 8.5

4. SYSTEM ARCHITECTURE

4.1 Architecture

Apply online software is a web application based on three tier architecture of the system as shown on Figure 1:

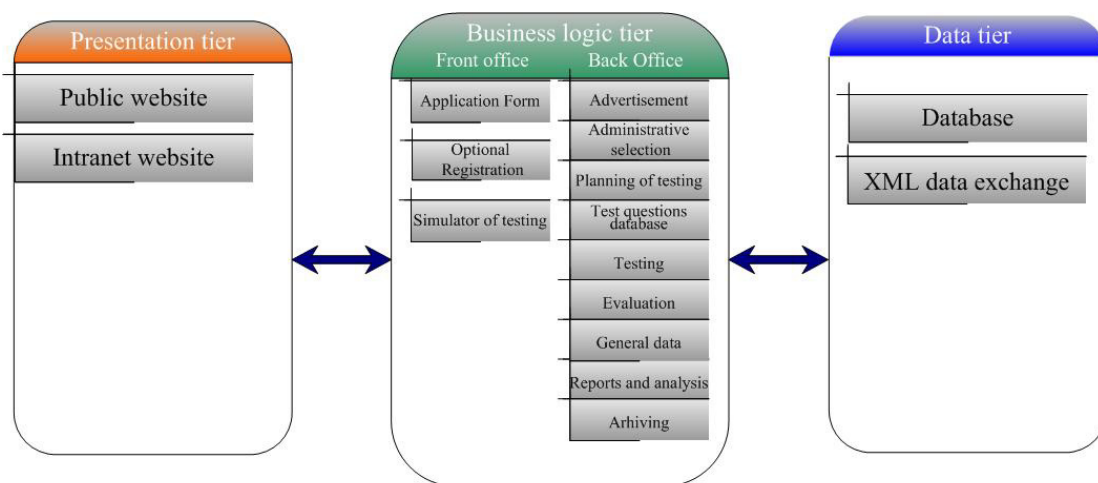


Figure 1

4.2 Language

Software interface shall be in Macedonian language.

5. APPLY-ON-LINE SYSTEM MODULES

This will be a modular system and a web based application. System will include the current technical working platform of the Civil Servants Agency, and will provide options for further development and upgrading.

Back office

5.1. Module 1: Advertisement

The module should comprise form for input and editing (delete and correction) data for each job advertisement:

- Institution for which the job announcement is published
- Date when the job announcement was published

- Validation period of the advertisement (after the period for submission of applications exceeds, the option to submit an application form will no longer be available)
- Data for each post listed in the job announcement (title, name of the post, number of executors, special criteria, etc)
- Code of the announcement (identification number)
- Code of each post listed within the job announcement

The job announcement data input in the system shall be used as a basis for creation of the application form for the candidates and for administrative selection.

The system should provide an option for sending information on new job announcement published to all e-mail addresses saved in the database (mail merge).

This module has to be executed as an intranet web application. The creators of the forms must login in the application using the Active Directory infrastructure of CSA. The application will communicate with a WEB service that will use COM+ application into which the business logic for creation of the forms will be incorporated.

The intranet application must be installed on a Windows 2003 server different from the server where the web services and the COM+ application will be installed. The existing MS SQL server will be used as a database. The identity of the user that creates the form must be delegated to all the levels within system.

Only members of the CSA domain will be able to login in the web application. The COM+ application has to be set up in such a way that only certain AD groups can use it. Only certain AD groups will be able to connect and use information stored on the MS SQL server.

5.2. Module 2: Administrative selection

This module will provide administrative selection of candidates by simply checking (comparison between criteria listed in job announcement and data submitted in the application form) and verifying if a candidate has adequate fields filled in and meets general criteria, prescribed by legislation and stated in the job announcement.

The system will produce reports and analysis as described below in the Reports and Analysis Module. The system will also produce Minutes for the Hiring Commission (established for each announcement individually).

5.3. Module 3: Planning of testing

This module should provide input of following data:

- Date, time and place of the testing for defined groups of candidates;
- Number of candidates in each group and affiliation of a candidate to a certain group.

It is necessary to control the number of candidates in each group verses the number of affiliated candidates (in order to provide security if errors occur during planning).

Following the testing schedule the system shall generate letters – invitations to testing (Word document) and send the same to the candidates (through e-mail or regular mail).

5.4. Module 4: Test questions database

Civil Servants Agency will formulate sufficient number of questions created in accordance with the current *Program for testing*.

The module should comprise form for input and editing (delete and correction) of questions for all 3 testing sections (general, special and practical) in the Test questions database. It should also provide “freezing” of the questions that are no longer valid.

The questions from the general and practical section of the testing shall be created and answered by the “multiple choice” method. They shall be divided by topics.

Each State administration institution shall formulate and submit sufficient number of questions, which will be stored in this database. These types of questions are necessary for the special section of the testing.

The questions for the practical section of the testing comprise a question text with a possible file attached (.doc, .xls, .ppt, etc).

An indicator should be affiliated to each question, which will show the level of complexity of the question.

This module shall provide printing option for questions (active and passive-“frozen”), as well as option for importing questions from .xls file created by a scheme set by the SW developer.

5.5. Module 5: Testing

The Civil Servants Agency is well equipped for computer based testing.

Each candidate shall be tested on a computer. The method of “multiple choice” is used for answering the questions.

The Apply-on-line System must provide both paper based and computer based testing. When paper based testing is organized, the results from the testing are manually inserted.

The module must provide alternative locations for on-line testing. Namely, the ultimate goal is to have testing conducted not only in the premises of the Civil Servants Agency, but in a number of locations across Macedonia, using public premises adequately equipped. Secured passwords will be provided for the candidates to access the on-line tests.

The module has to have a feature that will define the strategy for generating questions for each new testing. It will be defined by the criteria given by the testing administrator, that is: number of questions in the test; number of questions by topics;

level of complexity of questions; threshold for passing the test; there should be an option for defining in which individual section each candidate will be tested.

The module will provide the option for recording the created combination of questions (the combination shall be stored for further use: for the next group of candidates or other reasons).

Before the computer based testing starts, each candidate shall be requested to input personal data in the computer. Then the testing can start by generating a test for the general and the special section of the testing. The combination of questions shall be generated by the method of “random choice” and predefined strategy. Exception shall be the candidates that will take only the special section of the testing. In this case, the combination of questions shall be created only for this section of the testing.

During the testing the candidate must be given the opportunity to scroll down and review the questions. A visible timer should be placed on the screen from time to time, which will send signals of the time remaining till the end of the testing, continuously counting down the last X minutes.

After the candidate answers all questions, he/she will be asked to check and confirm the answers and then submit the same.

After the special section of the testing has finished, (candidate finished it or the time elapsed) the candidate shall be shown the points gained at the general and special part of the testing (pass – did not pass; number of points separately and accumulated). The candidate will be also given Print Preview of the test.

The module should also generate combination of questions for the practical section of the testing that can be printed.

5.6. Module 6: Evaluation

The module should provide automatic download and calculations of the following data:

- Points gained with the GPA (Grade Point Average) of the formal education
- Points gained at the general and special section of testing.
- Points gained at the practical section (manual input of points)

According to the summarized points (as listed above), the module shall create a range list of candidates for each post separately and shall create a range list of X best candidates. Minutes for the Hiring Commission will also be created.

The system shall generate letters – information on the testing results (Word document) for each candidate and send the same to the candidates (through e-mail or regular mail). The candidates will also be sent a certificate for passed general and practical section of the testing.

5.7. Module 7: Reports and Analysis

The module should provide creation of the following reports:

- Report on all candidates who applied on job announcement
- Report on applicants classified by each post announced in one job announcement
- Report on candidates selected at the administrative selection
- Report on candidates rejected at the administrative selection (list reasons why: ex. missing working experience, mismatch requested education, etc.)
- List of candidates invited to testing.
- List of candidates who attended the testing, and vice versa.
- Report on the results gained at the testing, separately for general and special testing, as well as a summary of the results.
- Final list of 5 best-ranked candidates for each post announced
- Other (how many applications were submitted on-line, and how many in a hard copy).

Summary reports and analysis:

- Reports listed above processed by the different parameters defined in the application form/announcement (average number of candidates by post in certain period of time, candidates by titles, sex, age, etc.);
- List of certificates for passed general and practical section of testing issued;
- Analysis of the questions (how many times did one question appear in generated combinations, percentage of correctly and incorrectly answered questions, etc.)

5.8. Module 8: Archiving

Module should be able to save and archive data (finished announcements, tests of candidates), and print various reports regarding the overall employment procedure conducted within the Civil Servants Agency, all conducted in periods and criteria defined by operator.

Front Office

5.9. Module 9: Application form

The application form will consist of mandatory and optional fields.

The application itself shall be considered as registration feature, since it shall consist of all personal data.

The Personal Identification Number (PIN) shall be used as a control instrument for verification of the submitted application form. If the PIN is not valid, the application shall be automatically rejected by the system. Other features can also be used as security options (Address, etc).

The applicant should state which section of the testing he/she will take.

The applicants will confirm the validation of the data submitted in the application form by checking verification box. (This way, the applicants will accept moral, criminal and material responsibility for the validity of the data submitted).

Options will be given for applying to more than one post or maybe an option shall be given for submitting as many application forms as many posts announced.

The module should provide manual input in the system of the application forms that were submitted to the Civil Servants Agency in a hard copy through regular mail. The Civil Servants Agency operators will input the data.

System shall recognise which applications were submitted on-line, and which were submitted in a hard copy.

1. Online interface for filling-in the form.

The Internet WEB application should be created as an ASP.NET application hosted on an IIS 60 on Windows 2003 server. Since it is expected that this application will be visited frequently, it should be projected to withstand scaling on 2 or more web servers.

2. Intranet interface for filling-in hard copy forms.

The Intranet WEB application should be created as an ASP.NET application hosted on an IIS 60 on Windows 2003 server. This application will be used by the employees of CSA that will input all the forms that arrive in any format, other than the online application.

3. Web service used for processing of all forms that arrive.

This service will be used as a support to the online and intranet interfaces for filling out the forms. The design has to plan for scaling of the web service of 2 or more web servers. The web service has to support the Microsoft WSE 2.0 standards.

4. COM+ application

In this application the business logic of the processing of the applications will be incorporated. It will operate on Windows 2003 server different from the server where the web applications and services are hosted. MS SQL 2000 will be used as a support. This application will be used to register the arrived forms and to support back-office activities.

The web service from point 3 will use this application.

The application must be projected to enable scaling on 2 or more servers.

5.10. Module 10: Optional registration

System should provide option for registration of the candidates interested in registering.

The applicants shall submit their personal data only once, when they request a user name and a password to register within the system.

The System Administrator would monitor this activity and should be able to enable/disable Usernames/Passwords.

After successful identification the applicant should be able to change the given data, except the username and PIN as unique identifiers for that account.

Every registered applicants will be able to open his/hers account and use it to see history data (how many applications they submitted, for which job announcement, results from previous testing, any other information the Civil Servants Agency submitted through e-mail, etc)

The module should also deal with lost username or forgotten password.

5.11. Module 11: Simulator of testing

Testing simulation shall be created and provided on the web site.

The simulator must be identical to the testing module with demo questions that are not part of the question database and are fixed.

6. DATABASE ORGANIZATION

It must communicate with the current database and present software application of the Civil Servants Agency.

7. SECURITY & PRIVACY

Apply-on-line system works with private and sensitive data that must be secured to certain extent.

7.1. Security trail All applications should be accepted and checked continuously by the system in terms of security and in order to provide statistical reports on different stages of the process. The system should log events and access control and should provide a module for automated processing of system logs, offering the capability of generating reports on user/system events and should be able to highlight possible attempts to perform illegal activities, like changing data and accessing confidential information. Only authorised persons should be able to gain access to this tool.

7.2 Privacy issues The system will collect no personal information about a user when user visits the web site unless the user chooses to provide that information to the system. If he/she chooses to provide personal information as an email or by filling out the form with personal information and submitting it through the web site, the system uses that information to respond to user's message. Personally identifiable information (name, email address, PIN, or other unique identifier) are collected only if specifically and knowingly provided by the user. Provided information is only shared with another government agency if the inquiry relates to that agency, or as otherwise required by law. The system does not collect information for commercial marketing.

8. BACK UP AND RECOVERY

Apply-on-line system is an around the clock system where the continuity is crucial and the vendor of the software is obligated to cooperate with the application host on defining and testing the back-up and recovery procedures for the developed system. The backup should be done on external media and in accordance to the standards defined by application host.