WEBSITE MODEL USED FOR EMPLOYEE RECRUITMENT

Mirela-Catrinel VOICU
West University of Timisoara
4 Vasile Pârvan Blvd., 300223 Timisoara, Romania
mirela.voicu@e-uvt.ro

Abstract. *In this paper, we focus on the importance of an online environment, used in employee recruitment activities. We present our website, using questionnaires, which help employers to select candidates for a job. The questionnaires allow us to detect the candidate qualification, personality and knowledge level. Before a first offline interview, we can make an online pre-selection. A pre-selection model, can include different stages, such as the following: an online questionnaire concerning professional qualification (for example, we can't recruit any person on an engineering job; he/she must have a certain level of engineering education); an online test which can confirm the knowledge level of the candidate; and one or more surveys on candidate personality. After each online test/questionnaire, we have to do some evaluations. The next step is to take into consideration only the candidates, which satisfy job requirements. Valuable online questionnaires containing significant questions must be implemented using specialists (in human resource, business, psychology, etc.). Only using adequate questions can we obtain good selection results. Using the online environment and some filters, we can know the candidate's profile very well before the first interview, training, year of working, etc., where, in general, many employers come across various surprises. The online environment allows us to detect candidates that are really close to the desired profile. In this way, we can be sure that during the first face-to-face interview we meet only suitable candidates.*

Keywords: human resources; employee recruitment activities; website; mobile browser.

Introduction

Over the past years, IT technologies have seen a powerful development greatly affecting many of the ways in which we work. Cloud computing technologies, mobile technologies, and new web technologies have brought many changes in our everyday behavior. Via the Internet, with the help of cloud computing technologies, we can use infrastructure, software, and platforms whenever we want, wherever we want and in whatever quantity we want. We can store our data in a cloud and use accounts on the Internet, we can access them from any place of the world. In addition, depending on the applications, we can access our data from different types of devices. Mobile technologies are currently at the center of IT developers' attention. The best smartphones models already have computer capabilities; via Bluetooth, they can be connected to keyboards, computer mice, video projectors or other devices. This is very important for those who travel a lot and want to have as little technology to carry with them as possible. The Internet is evolving and many fields of activity (including work) are becoming increasingly pronounced every day. All IT developments affect many other areas, which some years ago were held almost independent by the IT technologies.

The human resource is the most important resource for a company. Recruitment is not the only step in evaluating this resource, but it is the first, and one of the most important. If for example, we know not to employ an introvert in customer relationship positions or an extrovert in isolated places, we find that the life can be beautiful for both the employee and employer.

In this paper, we are interested in presenting how new technologies can help in recruitment activities. We make the website implementation using PHP code and MySQL database. For the design, we use Bootstrap - the most popular HTML, CSSS, and JavaScript framework, which is responsive and can be used very well from a desktop computer or from a mobile phone browser. The website has a login part for candidates. Inside the website account, the prospective candidates respond to different tests and quizzes. For the test and quiz implementation, we use a dynamical question tool, using checkboxes and radio button components. In addition, our website provides data analysis tools, in order to detect the best candidates for a certain job position.

On human resource recruitment

When we initiate a recruitment activity, we must consider some specialists: professional people from the job scientific area, from human resources, and psychologists. A professional person can determine if a candidate has the necessary competence for a certain job position. If you test a candidate and the results are satisfying, considering his studies and qualifications, you can make a decision about the candidate.

Even if this is the most important aspect, it is not the only one. The people are different, and generally, it is a bad idea to try to change them. Many people have strong personalities, some features you like, and other you do not like. As an employer, it is a good idea to get a general overview of the prospective employee's personality, before hiring.

Using questionnaires, for example, we can detect the candidate's personality and temperament. From Hedges (1993), we find that the basic characteristics of personalities are the following: extroversion (E) and introversion (I); sensing (S) and intuition functions (N); thinking (T) and feeling (F) functions; judging (J) and perceiving (P) functions. For example, the Idealists have NF temperaments (intuition, feelings). The NF temperament includes these types and their symbolic names: ENFJ – Teachers; INFJ – Counselors, ENFP – Champions; INFP – Healers. In the book mentioned above, we find all temperament types, starting from the main characteristics of personalities and making different combinations. Using online questionnaires, and adequate questions we can detect the personality type of our candidates.

In this paper, we present a website model used for recruitment. This website model uses questionnaires to detect the candidate personality. However, at this point we have to point out that the success of candidate selection is not given by the website implementation only; it is also strongly influenced by the questionnaires' content. At this step, you must consider psychology specialist which can formulate the questions. If the questions are not relevant, the results cannot lead to a good candidate selection.

The website helps you by replacing a big part of the human activity. It can be helpful if we specify the right context. Hedge's book (1993) is an example, but the way in which we formulate different questions is a completely independent problem from the website's implementation.

Many companies and firms have different tools aimed at recruitment on their websites. Some of them have only contact forms or small parts dedicated to recruitment, other firms include in their website more evaluated components used for recruitment. However, if today these recruitment components are not used massively on company websites, the following years will definitely see some changes in this area. Another important observation is that the way in which we can formulate these components of recruitments can be very varied. These modes also reflect the vision of the employer.

Even if in this paper we talk only about the recruitment, in the following years, human resources departments around the world, will have stored in databases more information on the professional evolutions of their employees over careers. At that time, the online recruitment will be a component integrated into a whole system on employees and their evolutions inside the company.

In the following section, we propose a website model, which can be used by small firms, but also by big companies.

Website model

In the first stage of our website presentation, we talk about questionnaires and tests formulation. Each personality questionnaire and each professional quiz consist of a set of questions. Now, we would like to present some details on these questions.

From the IT perspective, the ways in which we formulate questionnaires and quizzes can be varied. However, based on existing models (existing personality questionnaires and professional tests), we propose the scheme presented in Figure 1.
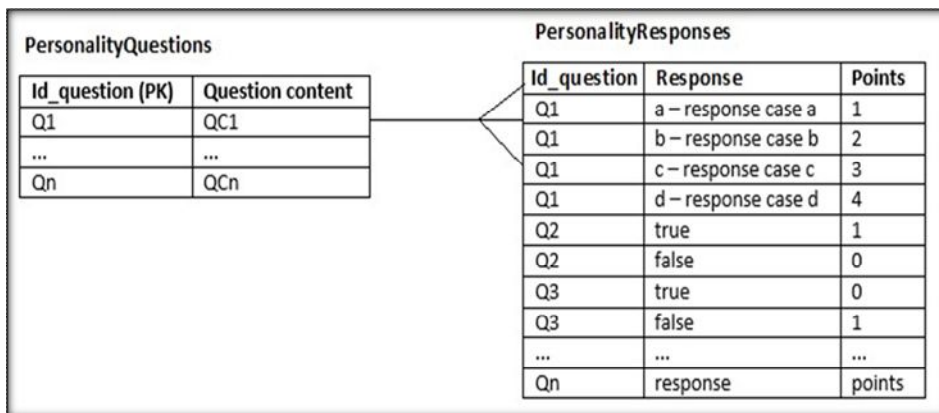
PersonalityQuestions

Id_question (PK)	Question content
Q1	QC1
...	...
Qn	QCn

PersonalityResponses

Id_question	Response	Points
Q1	a – response case a	1
Q1	b – response case b	2
Q1	c – response case c	3
Q1	d – response case d	4
Q2	true	1
Q2	false	0
Q3	true	0
Q3	false	1
...	...	...
Qn	response	points

Figure 1. Personality questions and responses

In a personality questionnaire, questions can be posed in the different ways: i) For a certain question, we can have two possible responses: true or false, where the

respondents choose one answer. We score each response (true and false) with 1 or 0, depending on the situation (see *Q2* and *Q3* in Figure 1). ii) For a certain question, we can have zero, one, or a possible response, where the respondent chooses a single answer, and we score each response with a certain value (see *Q1* in Figure 1).

In the cases i) and ii) we add all the question points. In addition, other types of questions can be formulated in personality questionnaires (e.g. for a certain question we can have two or more possible responses, where the respondents choose a different number of responses), but the two types, presented above, are the most common. For the types i) and ii) we use *radio buttons HTML* components, but if we choose other types of questions, we may need to use another kind of components. In addition, we would like to point out that each type of question requires different types of code implementation.

From Figure 1 we can observe that using only the i) and ii) question types, we can use a single table (*Personality Responses*) for all questions of all personality questionnaires. If we choose other question types in the database, we may have to change the structure of the tables from the Figure 1. For professional quizzes, we can also formulate a lot of question types and many scoring possibilities. Nevertheless, the real problem is the candidate's evaluation. One common way to formulate online quizzes is the following: to use questions with zero, one or more correct answers and giving the candidate the highest score if all responses to a single question were correct, and 0 if they were not. For the question *Q1* in Figure 2, we must use *checkboxes HTML* components, and for the questions *Q2*, and *Q3* we must use *radio buttons HTML* components. These observations are important from an IT viewpoint in order to facilitate the website construction.
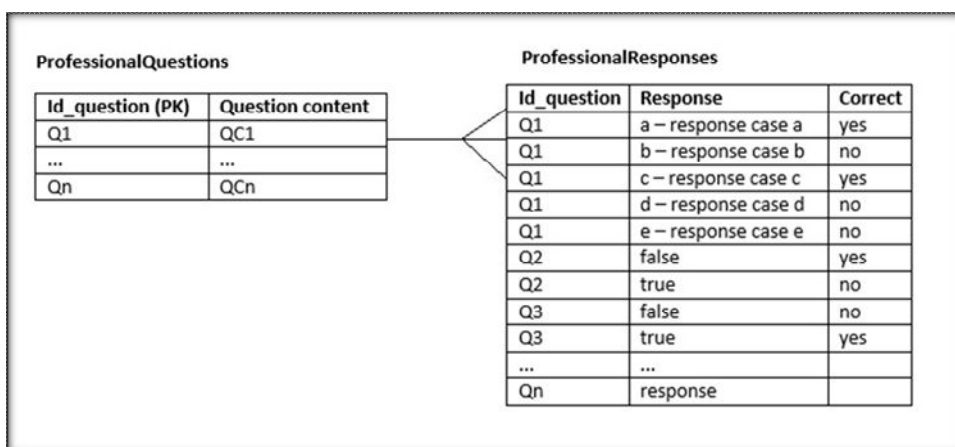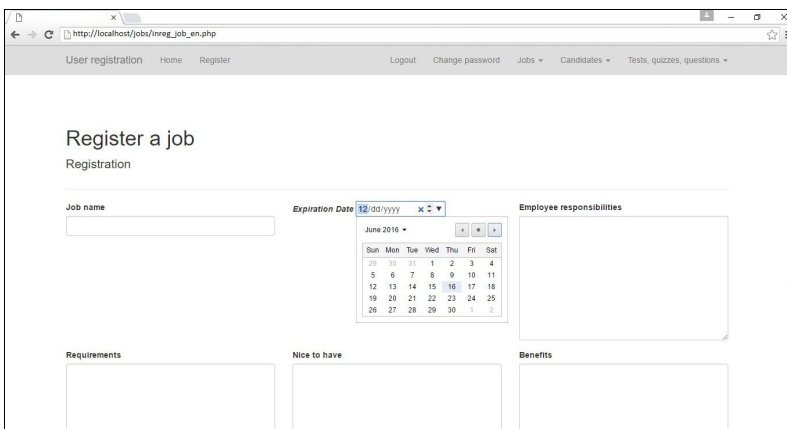
ProfessionalQuestions

Id_question (PK)	Question content
Q1	QC1
...	...
Qn	QCn

ProfessionalResponses

Id_question	Response	Correct
Q1	a – response case a	yes
Q1	b – response case b	no
Q1	c – response case c	yes
Q1	d – response case d	no
Q1	e – response case e	no
Q2	false	yes
Q2	true	no
Q3	false	no
Q3	true	yes
...	...	
Qn	response	

Figure 2. Professional questions and responses

For each test or questionnaire we select a set of questions from a database, we provide a test description and interpretation. If for a professional test it is easy to formulate an interpretation, we know very well that for a personality questionnaire, the interpretations vary greatly, depending on the content of the questionnaire questions. For this reason, in the database, we must store the complete interpretation for the test results.

Now, we present how we introduce and display a job position on the website. For proposing a job position on the website, we consider the following kind of information job name, expiration date of the offer for the job position, employee responsibilities, requirements, benefits, and other information. In Figure 3, we present the registration form web page with its image on a desktop browser. In Figure 4 (the left image), we have the image for the same information on a mobile browser. At this step, we must observe that the website is responsive. Using these two figures, we can observe that the representation is slightly different, but in each case, we can easily navigate inside the web page. The actual trends in web development are to build responsive websites. If you look on the internet, you can see that many of the oldest websites are not yet responsive. However, all these must be reformulated (from the web design viewpoint), to the responsive level. This is mandatory because the navigation on the Internet from the small devices is in a continuous increase. Currently, the most popular framework used for building responsive websites is *Bootstrap*. In addition, we have used it in the web page presented in Figures 3 and 4.

After recording a job position in a database, we associate it some personality questionnaires and professional tests. Their number is chosen by the employer, and may vary from one job position to another. When we propose a job position, we associate it some personality questionnaires and professional quizzes, which will be completed by all the candidates who apply for this job position. When we add a job position, it remains available among the offers on our website, until a set expiration date. In this time, any visitor to the website can view all job positions (see Figure 4 – the image from right) and associated information (see Figure 5).

In Figure 4, we display the name of all available job positions from the website. With a click on a certain job position, like in Figure 5, we can obtain the full information about this job position. In the page presented in Figure 5, we choose *collapsible panels* (*Bootstrap* components).

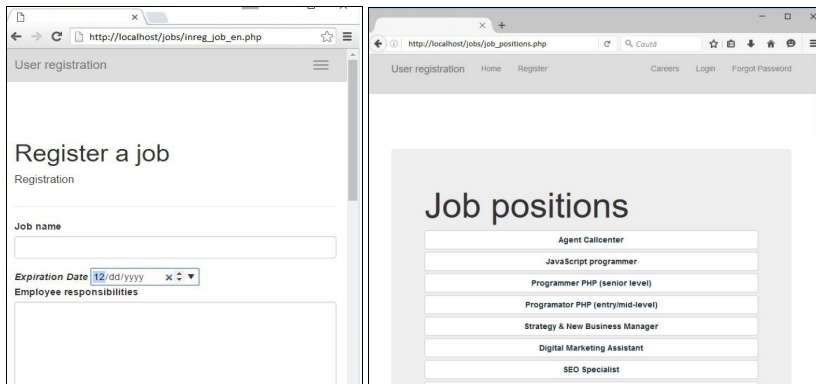**Figure 3. Job registration – webpage desktop image**

Figure 4. Job registration – web page mobile image; displaying job positions

For job position components (responsibilities, requirements, benefits, and other information), initially, we can see only the titles. With a click on a title, the associated information will be displayed. Of course, in order to display the information about the job position, we can use different *HTML* or *Bootstrap* components. However, the general idea is that displaying lengthy information can cause the navigation in the web page to slow down, especially from mobile devices. If it is possible to show and hide information, we facilitate the web page navigation.

With a click on the *Apply now* button (each job position has its own button), anyone can apply for a certain job.

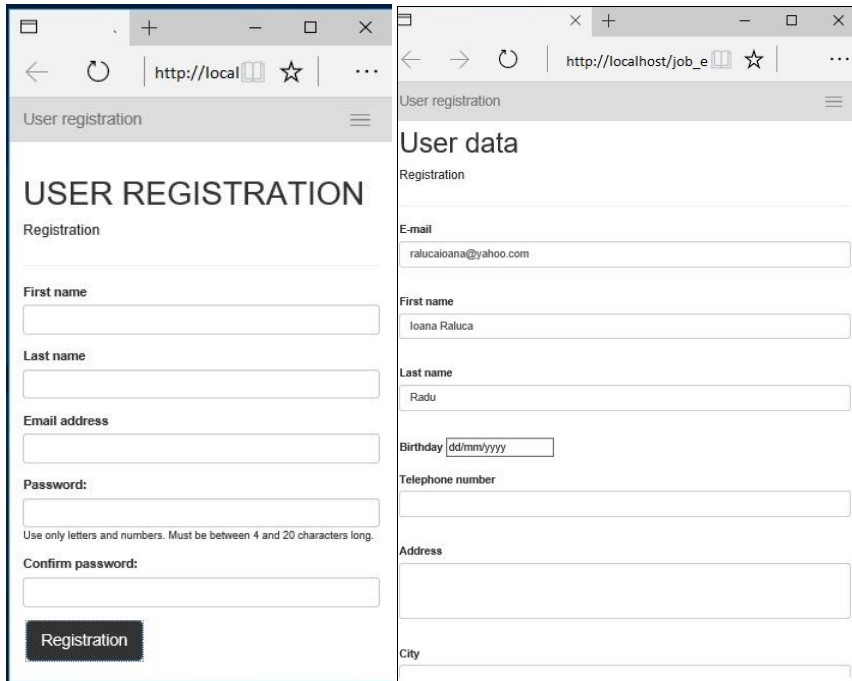*Figure 5. Displaying a job position*

Figure 6. User registration and user data

At this step, we propose the following scenario: when someone applies for a job position, we request only an email address. For this email address, the candidate must be registered on our website. This registration can be made before or after the job application.
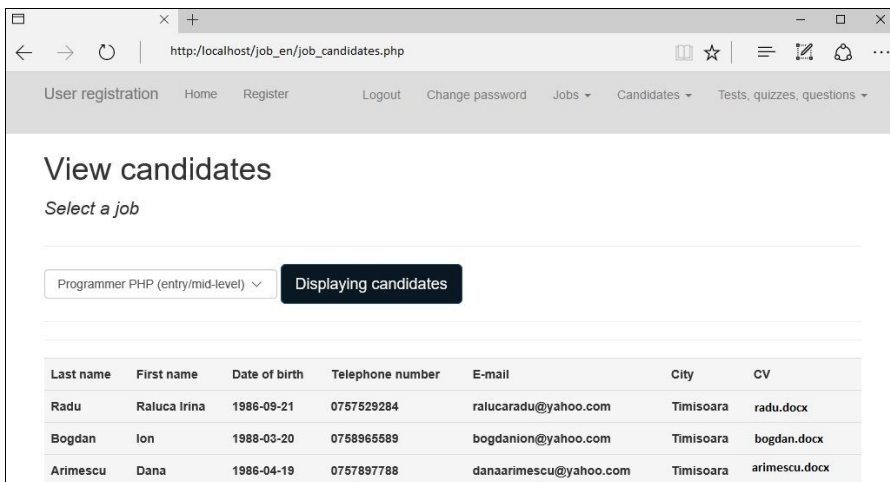

Figure 7. View the candidates' applications for a job position

We store the following information about the candidates: e-mail address, first name, last name, date of birth (or year of birth), telephone number, address, city, CV (upload a file), letter of intent, other information. Depending on the type of job, the candidate

can complete many other fields of information, e.g. data on completed studies (education level, graduation year, name of school, specialization, grade of study years, graduation exam), foreign languages (name of language, reading level, writing level, conversation level), etc. If the employer is interested in certain aspects, such as the following: if the candidate plays sport, if he is or no smoker, etc., then the employer must add specific components in the candidate form. In order to easily analyze a list of candidates which have applied for a certain position, it is a good idea to add more fields in the candidate form. We can add how many such fields we want, and the topics of these fields correspond to the employer's curiosity about the candidate profile. Maybe, for different positions, it is not important if the candidate is thin or fat, but in certain cases, this thing may influence the candidate's selection. However, no matter how many fields are completed by the candidates, it will be a good idea to allow the candidate to add information about him. In some cases, such information can make all the difference in choosing candidates. This can be made by allowing the candidate to upload files on the website (e.g. a CV file) or adding text components like *other information*, etc.

We have the navigation bar, fixed at the top of the web page. In *Figure 6*, we can observe that the navigation bar is too large on a small mobile screen. *Bootstrap* allows us to use a button in the top right corner to display the navigation. This means that people can apply for a job position, using a desktop or a handheld device.

When a candidate has registered on the website, for each job application, a set of quizzes and tests will be available to him to be completed until a certain date. As an employer, you can view information about the candidates. In Figure 7, we select a job position, and we can view some candidates' data. At this step, you can make many data analyses about the candidates, considering the test and questionnaires results, and use the personal data from their website profile. After this step, the employer can make a selection of candidates, or he can apply additional tests only for a certain part of important candidates. The employer can stop the filtering activity when he wants. After all these steps, the most important candidates can be invited for a face-to-face interview.

The website model presented above helps us eliminate the candidates that are not appropriate for a certain position. The remaining candidates will be further assessed in a face-to-face interview and testing.

Conclusion

The new technologies have changed the ways in which we develop our activity. A great number of activities used to be independent of computers and today are aided greatly by IT technologies.

Computers are intended to replace routine work, however, as was have seen in this paper, specialists from various disciplines will formulate issues and interpret the data analyses. In the following years, online recruitment will become more and more present in activities of recruitments and will help small firms, and big companies choose the best employees for certain positions. This helps the employer, but also the employee.

We have presented a website model which uses *Bootstrap* framework for web design, *PHP* and *MySQL* for code implementation, but we can use many other tools (other programming languages, other databases relational or not, and other tools for web design). In addition, as we have pointed in our paper, IT continues to evolve, and in the following years, other modern tools will appear in order to build websites. This means that for implementation the used technology is not that important (however, its level is very significant), the models of websites and their contents are important.

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