Assessment Test

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| First name: |  | Date of submission: |  |
| Last name: |  | Time to complete (hrs): |  |
| Educational Institution: |  | Hrs. avail. per week |  |
|  |  | Score: |  |

## Introduction

The purpose of this test is to evaluate the applicant’s technical knowledge for the position and his talent to face new challenges.

Unlike many tests, this assessment looks to replicate how real life is in the IT industry: The ability to find solutions and answers in a reasonable time period.

So we do not expect that the applicant masters all the fields the questions are related to, but the applicant’s ability to do research, ask the right persons and come up with a solution.

But we recommend the applicant not to answer questions that he don’t understand with all the background he already has. So having strong theory and knowledge in Software Development is a must.

## Rules and Recommendations

These are the **rules** to follow to be able to qualify for the test:

• Submit the completed Assessment Test before the deadline (see Test Duration)

• Complete every answer with an explanation.

• Document code when applies.

**Recommendations**:

• Complete the test in English. It is not mandatory but it will definitely add value to the application.

• Propose more than one solutions when possible, and explain why each one has its one merits.

• Use Google, books or any other source to answer the test. In any case, the applicant should explain and demonstrate that he understands the question and answers provided.

## Methodology

After being contacted by the recruiter, the applicant should receive an email with this test. If you have any question about the test, please contact the recruiter.

The applicant should submit the completed test by email with any attachment that he might consider appropriate.

The applicants who passes the assessment will be contacted by a recruiter to arrange an interview. In that interview we will validate that the applicant actually completed the assessment by himself and we will also check the English level.

## Test Duration

The applicant has **1 day** to complete the test from the moment he received the call from the recruiter explaining the test. For the person who has knowledge in all these areas, the full exam can be answered in less than 90 minutes.

## Questions

For all the test’s purposes, the programming language to use is PHP. It is recommended to provide a link where the code can be tested. Bonus questions are optional but will help compensate when other questions can’t be answered.

## PHP o JAVA

Answer the following questions:

1. What command do you use to output data when you are testing functionality:

System.out.println();

1. Using a PHP o JAVA function if it exists or by creating a custom function, convert a string such as “red, green, yellow, blue” into an array like this: array(0=>”red”, 1=>”green”, 2=>”yellow”, 3=>”blue”)

c. From the previous array, extract the 2nd element into a variable so the array is left with only 3 elements.

## Algorithms

a. Using PHP o Python, ordering algorithm.

## UI

a. Create a webpage with HTML, CSS and Javascript/JQuery that presents:

• A header of 100px high always at the top of the page with any size of window.

• A footer of a 80px high always at the bottom of the page with any size of window.

• The main page or container is 100% the width of the window and up to 1200px maximum. After that it keeps 1200px width but centered in the browser window.

• Use different colors for each section.

## Object Oriented Programming

a. Create a class that handles Command that inherits from the BasicCommand class. Propose any attribute you want. In the constructor, make sure you invoke the parent’s constructor. Explain why inheritance is useful and why not use interfaces.

b. Create a trait called SoftDeleting, with a delete method and use it in the previous 2 classes. Explain why traits are useful.

## Databases (Relational and NOSQL)

a. Create a database schema that support ACL functionality with these characteristics:

• I want to support User, Roles and Groups

• A user can have multiple Roles and belong to many Groups

• A Role can be assigned to several Users.

• A Group can be composed by any number of Users

• I want to control access to menu options for an application that can have any number of menus.

b. Given a table Users and Roles, provide the SQL statement that get the list of all Users that don’t have an specific Role ABC but belong to a Group XYZ.

c. What are transactions? Why are they important?

d. Why NoSQL are important? What are the differences with Relational Databases?

e. What means Horizontally Scaling and why is important?

## Document versioning

1. What tools have you used for control versioning. Have you used GIT?

Si, cuando trabaje como freelancer en un proyecto de ventas.

b. Using GIT, how do you connect your local repository with your remote repository in Github

c. Using GIT, how do you avoid adding to the repository specific files like public images or so?

## MVC

1. Explain the benefits of using an MVC approach. Mention any limitation or drawback. Mention all the MVC frameworks used in the past, if any.

Beneficios de usar MVC

* Separación clara de dónde tiene que ir cada tipo de lógica, facilitando el mantenimiento y la escalabilidad de nuestra aplicación.
* Sencillez para crear distintas representaciones de los mismos datos.
* Facilidad para la realización de pruebas unitarias de los componentes, así como de aplicar desarrollo guiado por pruebas (Test Driven Development o TDD).
* Reutilización de los componentes.
* No existe ciclo de vida de las páginas. Con menos peso, menos complejidad.
* Motor de Routing asociando una URL concreta con su correspondiente controlador, permitiendo URL semánticas. Las URL semánticas se indexan mejor en los buscadores, siendo más adecuadas para el posicionamiento web.
* Recomendable para el diseño de aplicaciones web compatibles con grandes equipos de desarrolladores y diseñadores web que necesitan gran control sobre el comportamiento de la aplicación.

Algunas Limitaciones:

* La cantidad de archivos que se deben mantener incrementa considerablemente.
* La curva de aprendizaje es más alta que utilizando otros modelos.
* Su separación en capas, aumenta la complejidad del sistema.

**SPRING MVC**

## Project Management

1. What is Agile Scrum. Have you used it in the past? How is it different in comparison with Waterfall methodology.

Lo he usado en un proyecto para el desarrollo de un sistema de gestión de documentos para un estudio de abogados, donde abarcamos todas las etapas y procesos descritos en el libro SCRUMstudy-SBOK-Guide-3rd-edition. Me desempeñe como producto owner

Todo el proceso esta documentado en el siguiente blog:

<https://softwaremet.wordpress.com>

La principal diferencia es que cuando se emplea WaterFall, se hace un estudio exahustivo en el etapa Analisis de requerimientos para encontrar los requerimientos, los cuales una vez identificados se mantienen a lo largo del proyecto. El principal problema con este enfoque es que por lo general, el cliente no sabe lo quiere lo cual lleva a entregar productos que no se ajustan a las necesidades del cliente.

En cambio la metodología Scrum se basa en iteraciones, concibe el cambio de requerimientos como algo natural en el desarrollo de software. Tiene como meta ofrecer el mayor valor posible al cliente, es por ello que este participe durante todo el proyecto.

El flujo básico seria construir entregable, entregárselo al cliente de ahí se produce un feedback donde se confirman o reajustan algunos elementos y asi iteración tras iteración se llega al producto final.

1. What are the roles for Agile Scrum? What are their responsibilities?. What role will you be assigned as Software Developer?

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| --- | --- |
| Product Owner | Es la persona responsable de lograr el máximo valor empresarial para el proyecto. Este rol también es responsable de la articulación de requisitos del cliente y de mantener la justificación del negocio para el proyecto. El Product Owner representa la voz del cliente. |
| Scrum Master | es un facilitador que asegura que el Equipo Scrum cuente con un  ambiente propicio para completar el proyecto con éxito. El Scrum Master guía, facilita y enseña las prácticas de Scrum a todos los involucrados en el proyecto; elimina los impedimentos que pueda tener el equipo y se asegura de que se estén siguiendo los procesos de Scrum. |
| Equipo Scrum | Es el grupo o equipo de personas responsables de entender los  requisitos especificados por el Product Owner y de crear los entregables del proyecto. |
| Stakeholder | es un término colectivo que incluye a clientes*,* usuarios y patrocinadores, que con frecuencia interactúan con el equipo principal de Scrum, |
| Scrum Guidance Body | es un rol opcional, que generalmente consiste en un conjunto de documentos y/o un grupo de expertos que normalmente están involucrados en la definición de los objetivos relacionados con la calidad |

El rol que se me asignaría seria Equipo Scrum.

En el proyecto en el que participe me desempeñe como product owner

c. What reports/tools do we have available to analyze the project progress? Explain.

Para hacer un seguimiento del proyecto, empleamos Spring BurnDown chart, donde se mostraba lo que teníamos que haber avanzado con lo que avanzamos. Es una herramienta muy útil que te permite saber cuanto estas avanzando

## Behavioral Questions

In this section, there is not right or wrong answer. The goal of this is to know how would you approach real life scenarios. You can choose multiple answers (specify sequence when applies).

1. You are working on a functionality you are assigned. You have several questions, so you:

a).  Call your manager to ask all the questions you have

b).  Send an email to your manager to ask for a meeting to solve all your questions

c).  Read all the documentation you a have been provided to look for answers

d).  Contact a peer/team member to ask questions

e).  Wait until the next programmed meeting to avoid interrupting others.

2. You are asked to code some task that is new to you, so you:

a).  Start from scratch to avoid wasting time doing research

b).  Tell your manager you are not the best person to code the task

c).  Ask all the team members for any advice to reuse code

d).  Go to Google and start searching for the best solution available

e).  Ask you manager for more time or to postpone the task.

3. You know that an estimation for one of your tasks is probably wrong, so you:

a).  Report immediately in the next meeting about this and propose a new estimation

b).  Try to do your best to complete the task in that time, to avoid the inconvenience

c).  Ask for help from other team members to finish your task

d).  Work hard, doing extra-time to complete the task

e).  Request the manager to reassign the task to a team member with more knowledge

4. You are asked for help from other team member, so you:

a).  Ask the team member for a time later during the day to talk about the issue

b).  Immediately leave all your tasks on hold and try to provided help as soon as possible

c).  Tell him you are busy and that he should contact the manager for help

d).  Help your peer but ask the manager for more time to compensate for your help

e).  Guide your peer through some guidelines so he can find the answer by himself

5. You are coding a functionality and while examining the available solutions, you:

a).  Choose the fastest solution so you can do some catch up with other activities

b).  Choose the best solution available

c).  Talk about the options available in your next meeting to ask for suggestions

d).  Choose the best solution for the project in terms of flexibility and maintenance cost

e).  Choose the best solution that you can deliver in the time assigned for the task

**THANK YOU FOR YOUR TIME!**