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Web Technologies

Web project life cycle

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What is a Project?

The word "project":

- Comes from the latin word projectum that actually meant "something that comes before anything else happens"
- When the modern languages initially adopted the word, it referred to a plan of something, not to the act of actually carrying this plan out
  - Something performed in accordance with a project is known as "object"
- In the 1950s, with the development of project management techniques, its meaning changed in order to cover both projects and objects.
  - In project management, it means a temporary endeavor undertaken to create a unique product, service or result

What is a Project?

Smallest project

You know what you have to do, do it, once, and that's a project

A project, by definition, is a temporary activity with:

- a starting date and a defined end date
- specific goals and conditions
- defined responsibilities
- a budget
- a planning
- multiple parties involved

Definition of a project

A complex venture, unique and having a well defined duration, aiming at pursuing a clear and predefined goal through a continuous process of planning and control of resources

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Web Project Life Cycle

- Research & Planning
- Design
- Implementation, Testing and Documenting
- Deployment
- Maintenance

Research & Planning

- Collecting general requirements
  Customers typically have an abstract idea of what they want,
  Incorrect requirements could be produced at this point; the
  risk is reduced by
  - Having a solid knowledge of the specific enterprise processes
  - Frequently demonstrating live code
- Determining scope development The set of requirements the
  product will meet is clearly stated
  - Some requirements may be excluded because of cost or of
    unclear requirements
  - If the development is outsourced, this document can be a legal
    document

Design

- Domain analysis is often the first step in designing the product to be delivered
- In case the developers are not sufficiently knowledgeable in the enterprise processes covered by the product, the first task is to investigate the so-called "domain" of the software
- The more knowledgeable they are about the domain already, the less work required to make the analysis
  - Domain terminology
  - Enterprise process

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Design: Specification

Specification is the task of precisely describing the software to be written, possibly in a rigorous way

- most successful specifications are written to understand and fine-tune applications that were already well-developed
- safety-critical software systems are often carefully specified prior to application development

Specifications are most important for external interfaces that must remain stable A good way to determine whether the specifications are sufficiently precise is to have a third party review the documents making sure that the requirements and Use Cases are logically sound

Design: Architecture

The architecture of a software system (software architecture) refers to an abstract representation of that system

- Architecture is concerned with making sure the software system will meet the requirements of the product, as well as ensuring that future requirements can be addressed

- The architecture step also addresses interfaces between the software system and other software products, as well as the underlying hardware or the host operating system

Implementation, Testing and Documenting

- Implementation is the part of the process where software engineers actually program the code for the project
- Software testing is an integral and important part of the software development process.
  - This part of the process ensures that bugs are recognized as early as possible
- Documenting the internal design of software for the purpose of future maintenance and enhancement is done throughout development

Deployment

- Deployment starts after the code is appropriately tested, is approved for release and sold or otherwise distributed into a production environment
- Software Training and Support is important
  - many projects fail because the technicians fail to realize that the value of a product is the one perceived by the customer
  - users are resistant to software changes, so as a part of the deployment phase, it is very important to have training classes

Maintenance

- Maintenance and enhancements can take far more time than the initial development of the software
  Customer reports problems
    - It is assessed whether tests have been extensive enough to uncover the problems before customer do
    - If the cost of the maintenance phase exceeds 25% of the prior phases' cost then the overall quality of at least one prior phase is poor

- Bug tracking system tools are often deployed at this stage of the process to interface development teams with customer/field teams

Types of Web Application

There exist many types of web applications, we cite the following:

- Static Web Application
- Dynamic Web Application
- E-commerce Web Application
- Portal Web Application
- Content Management System (CMS)

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Static Web Application

- Works perfectly in the offline mode
- Don't require installing any third-party software to access the static web applications.

Examples:

- Digital curriculums
- Portfolios

Dynamic Web Application

- You can change and update your information directly on the dynamic web app

Examples:

- Conference

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E-commerce Web Application

- Allows selling goods or services from a single platform.
- A great way of expanding business online.

Examples:

- Ecommerce business
- Online services
- Online shopping store

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Portal Web Application

- Banking and Insurance portals
- Vendor portals
- Student and faculty portals
- Government portals
- Employee training portals

Content Management System (CMS)

- Provides total control to modify the content and design of the website.

Examples:

- Websites builders
- Blogging
- News Portals
- Marketing and Sales Platform

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Layers of Web Development

There exist three layers

- Server Side
- Client-Side
- Full Stack

Client side

Known as frontend development

- HTML, display content
- CSS, page style
- JavaScript, dynamic and interactive page

Server side

Known as backend development

- Databases
- Servers
- Logical components

Full Stack

Full-Stack development combines the frontend and backend, which encapsulates the whole process of web development. In this layer, you deal with the entire stack of tasks and technologies involved in the website development cycle.

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Questions ?