Coding

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Introduction

- Goal of the coding or programming activity is to implement the design in the best possible manner.
- coding activity affects both testing and maintenance profoundly.
- the goal during coding should not be to reduce the implementation cost, but the goal should be to reduce the cost of later phases

Programming Language & Development Tools

- Programming language is a formal language that specifies a set of instructions for computer to do something.
- Programming language are used in computer programming to implement algorithms.
- Development Tools is a set of tools to help software developer in doing their tasks to create software product:
  - IDE (Integrated Development Environment)
  - Compiler/Interpreter
  - Debugger
  - Editor
  - Package Management

Selecting languages

- Type of application
  - the type of application you're developing heavily influences what languages are available for us to choose from.
- Complexity of the application
  - Small projects such as simple marketing sites, portfolio presentations and simple web application forms to collect data can be done with some CMS systems like WordPress or Umbraco, which requires knowledge of PHP or C#, respectively.
  - Medium-sized projects including e-commerce sites, internal enterprise applications and IoT solutions usually have different layers, components and integrations where a more general programming language such as Java or C# could help simplify skill set requirements to maintain the products.

Selecting languages

- Time to market
  - It's important to think about the skill set of your current employees. Unless there's a compelling reason to introduce a new technology, we always recommend leveraging existing skillsets to bring new ideas to life faster.
- Maintainability
  - Every technology stack and language comes with an ecosystem of libraries and vendor supports for those libraries. We want to look at the trend and update release cycles to make sure what we pick is current and stay current for some time to come.

Selecting Tools

- a number of factors when deciding on the tools to use in the software development of each project.
- Usefulness
  - The primary factor when deciding on whether to use a type of tool, and which implementation of that tool is the usefulness it will provide to the overall completion of the project.
- Applicability to Environment
  - Not all tools apply to all environments. For example, a Windows desktop application will have no use for a web deployment tool.

Selecting Tools

- Company Standards
  - use of certain tools will be mandated in order to achieve goals or to comply with established policy.
- Integration
  - How well a tool integrates into other tools can greatly impact the value it adds to the team and the project.
- Prior Team Experience with Tool
  - The selection of specific tools can be influenced by the level of experience developers may already have with it.

Good Programming Practices

- **Use consistent indentation**
  - There is no right or wrong indentation that everyone should follow. The best style, is a consistent style. Once you start competing in large projects you'll immediately understand the importance of consistent code styling.
- **Follow the DRY Principle (Don't Repeat Yourself)**
  - The same piece of code should not be repeated over and over again.
- **Limit line length**
  - Long lines are hard to read. It is a good practice to avoid writing horizontally long lines of code.

Good Programming Practices

- **Naming conventions**
  - Use of proper naming conventions is a well known best practice. Is a very common issue where developers use variables like X1, Y1 and forget to replace them with meaningful ones, causing confusion and making the code less readable.
- **Keep the code simple**
  - The code should always be simple. Complicated logic for achieving simple tasks is something you want to avoid as the logic one programmer implemented a requirement may not make perfect sense to another.