

20CYS312 - Principles of Programming Languages

Exploring Programming Paradigms

Assignment-01

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- Relationships and rules to derive conclusions through logical inference.
- **Logic Rules:** A set of rules and facts express relationships and conditions.
- **Queries:** Statements to be proven or satisfied based on defined rules.
- **Inference Engine:** Mechanism that executes rules to derive conclusions.
- Ex: Prolog
- **Applications:**
 - Knowledge representation in Artificial Intelligence.
 - Database query languages.
 - Symbolic mathematics and theorem proving.



- Building dynamic web applications.
- **Server-Side Scripting:** ASP.NET uses languages like C to implement logic on the server.
- **Event-Driven Logic:** Handles user interactions and system events.
- **Code-Behind Files:** Logic is embedded within code-behind files associated with web pages.
- **Strengths:**
 - Robust event handling for responsive user interfaces.
 - Seamless integration with databases and server-side logic.
- **Applications:**
 - E-commerce platforms.
 - Enterprise-level web applications.
 - Content management systems.



- **Server-Side Scripting:**

- ASP.NET leverages languages like C and VB.NET for server-side logic.
- Logic is executed on the server before sending the response to the client.

- **Event-Driven Programming:**

- Logic is triggered by events like button clicks, page loads, etc.
- Enables dynamic and interactive web applications.

- **Code-Behind Files:**

- Logic is organized in separate files associated with web pages.
- Enhances maintainability and separation of concerns.



- Quick and flexible programming to automate tasks and solve specific problems.
- **Rapid Development:** Suitable for quick development cycles and prototyping.
- **Task Automation:** Commonly used for automating repetitive tasks.
- **Simplicity and Readability:** Prioritizes easy-to-read and concise code.
- Ex: Python, Ruby, JavaScript, among others.
- **Applications:**
 - System administration and automation.
 - Rapid prototyping and development.
 - Embedded scripting in applications.



- Task automation framework and scripting language designed for system administration and automation.
- **Integration with .NET:** Access to .NET libraries for enhanced capabilities.
- **Pipeline:** Connects cmdlets for efficient data flow.
- **Script Blocks:** Encapsulates a series of commands for reuse.
- **Applications:**
 - System administration and configuration.
 - DevOps automation and scripting in pipelines.
 - Task automation on Windows and cross-platform.



- **Dynamic Typing:**

- Variable types determined at runtime for flexibility.
- Requires careful management to avoid unexpected behavior.

- **Rapid Development:**

- Well-suited for quick iterations and development cycles.
- Ideal for automating repetitive tasks with concise scripts.

- **Examples:**

- User management, file operations, and system configurations.
- Integration in DevOps pipelines for deployment and testing.
- Efficient text processing with regular expressions.



- **Logic Paradigm vs. Scripting Paradigm:**

- Logic paradigm emphasizes rules and relationships for logical inference.
- Scripting paradigm focuses on quick and flexible programming for task automation.

- **ASP.NET vs. PowerShell:**

- ASP.NET integrates logic for web development with server-side scripting.
- PowerShell provides a powerful scripting framework for system administration and automation.

- **Considerations for Choosing:**

- Project requirements, complexity, and development goals.
- Integration with existing systems and technologies.
- Team expertise and familiarity with the paradigm.



- 4 Programming Paradigms In 40 Minutes - <https://www.youtube.com/watch?v=cgVVZMfLjEI&t=1740s>
- ASP.NET Core Crash Course - C App in One Hour - <https://www.youtube.com/watch?v=BfEjDD8mWYg>
- Overview of ASP.NET Core - <https://learn.microsoft.com/en-us/aspnet/core/introduction-to-aspnet-core?view=aspnetcore-8.0>
- Learn PowerShell in Less Than 2 Hours - <https://www.youtube.com/watch?v=ZOoCaWyifmI&t=23s>
- Overview of PowerShell - <https://learn.microsoft.com/en-us/powershell/scripting/overview?view=powershell-7.4>

