Miami Dade College

Course Description

CIS2991C | Cloud Developer| 4.00 credits

This course focuses on the role of a software developer in the cloud. A student will demonstrate an understanding of core cloud services, uses, and basic architecture and best practices. They will demonstrate proficiency in application lifecycle management, developing, deploying, and debugging cloud-based applications, serverless computing and containers by using the primary cloud platform tools for development including IDE's, distributed version control systems, CI/CD pipelines, including security best practices. Use of API's, command line interfaces and software development kits (SDKs) will be emphasized. Prerequisites: COP1047C and CTS2375C.

Course Competencies:

Competency 1: The student will demonstrate the ability to deploy applications in cloud environments by:

1. Deploying written code using existing CI/CD pipelines, processes, and patterns
2. Using appropriate versioning control systems for branching and release management
3. Applying appropriate cloud tools for managing the software architecture process
4. Analyzing and troubleshooting technical issues in compiling, debugging, and deployment of code
5. Understand how cloud infrastructure as code works
6. Creating and introducing cloud application stacks, including resources and environments
7. Determining cloud resources necessary for application deployment
8. Validating application health using cloud tools
9. Understanding the difference between Development, Test, and Production environments

Competency 2: The student will apply appropriate security methods and practices to cloud development by:

1. Understanding how security works in cloud environments
2. Understanding the least privilege policies
3. Applying the policies of least privilege to applications
4. Implementing encryption using appropriate services both at rest and in transit
5. Implementing application authentication and authorization

Competency 3: The student will develop serverless applications by:

1. Comparing and contrasting server-based vs. serverless applications
2. Understanding how decoupling applications work in cloud infrastructure
3. Understanding serverless cloud environments, including environment parameters, variables, and system design
4. Applying serverless computing to databases for information capture and retrieval
5. Associating serverless applications with appropriate databases
6. Applying appropriate synchronous and asynchronous invocations
7. Creating applications using caching, messages, and stateless environments

Competency 4: The student will troubleshoot applications by:

1. Optimizing applications using appropriate cloud resources
2. Understanding how to migrate applications through isolating dependencies
3. Understanding how to refactor an application

Competency 5: The student will demonstrate monitoring and troubleshooting by:

1. Writing code that can be monitored through cloud-native dashboards
2. Building systems with correct logging
3. Building correct systems enabling performance tracing
4. Performing root cause analysis on system faults in both testing and production
5. Understanding build and testing history

6. Tracking specific issues to underlying components

Learning Outcomes:

- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Use computer and emerging technologies effectively