CC - Azure Cloud Specialist Randstad

	MON	TUE	WED	THU	FRI	ENVIRONMENT
Week1-Python Fundamentals **(Agile for Developers, Git - Fundamentals, Python-Fundamentals)**	Python-Fundamentals Python-Orientation • full-stack-overview • Interpreter vs compiler • REPL Jupyter Agile for Developers SDLC • Introduction To SDLC • Waterfall • Agile • Agile Vs Waterfall • Story Pointing • Scrum Ceremonies Git Fundamentals OS-Introduction • OS: Fundamentals • Unix/Linux: Demo Moving and Deleting Files (Using Git Bash) • Unix/Linux: Demo File Commands (Using Git Bash) Git Introduction • Source Control Management(git,vcs, cvcs,dvcs) • Git Fundamentals • Initializing A Repository • Pushing To A Remote Repository • Git Commit, Branch, Merge, Push, Pull	Python-Fundamentals Python-Basics • what-is-python-why-python • python-syntax • comments • variables-and-datatypes • operators • user-input-and-output Python-DataTypes • namespaces • strings • casting • boolean • lists • tuples • range • sets • binary-type • nontype • dictionaries • numbers • Datetime	Project 0 Python-FlowControl-Stmts • if-else • while • for Python-Functions & Arrays • function • lamda • arrays Python-Classes & Inheritance • classes-and-objects • OOP Concepts: Inheritance, Abstraction, Polymorphism, Encapsulation • inheritance • iterators • scope	Project 0 Python Coding Challenge Python-Modules • module • math • Logging • json • regex • pip-and-install-pip • pylint Python-Exception Handling • error • exception-handling • try-except	Project 0 Python-File Handling • file-handling • read-files • write-create-files • delete-files • Unit Testing Review Topics	

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	Git Exercises					
Week 2 - DevOps (DevOps, CI/CD, Docker, Kubernetes)	Project 0 Linux File System • Linux Introduction • Navigation • File creation and editing • Directory creation • moving files/directories Scripting • Why use scripts? • Variables • Simple Operators • Conditional Statements • Loops • Passing data into a script Scripting Exercise Piping • Passing data from one command into another • Transforming output • Filtering output Piping Exercise Package Management • Package Management Software • Installing software • removing software User Management • Purpose of User Management • Groups	Project 0 DevOps Concepts DevOps and CICD Concepts • DevOps Introduction • Continous Integration • Continous Delivery • Continous Deployment Code Quality and Reliability with DevOps • Static Code Analysis • Monitoring and Logging Jenkins Introduction To Jenkins • Introduction to Jenkins • Jenkins Jobs and Builds Jenkins Configuration • Creating a CICD pipeline with Jenkins • Jenkins Credential Management • Jenkins Plugins and Integrations • WebHook Creating a CICD pipeline	Project 0 Docker Introduction to Docker • Containerization • Docker Architecture Docker Installation and Setup • Installing Docker • Dockerfile • Docker Images • Docker Containers • Basic Docker CLI commands Creating and deploying a Docker container • DockerHub Creating and deploying a Docker container	Project 0 Kubernetes Kubernetes Orientation • Orchestration - Introduction to Kubernetes • Kubernetes Architecture • Concepts - pods, services, volumes, nodes, clusters • Controllers - ReplicaSets and Deployments • Objects - names, namespaces, labels and selectors • Containers vs VMs Kubernetes Deployments • YAML Configuration Files • Setting up single-node local clusters • kubectl • Deploying Services into Kubernetes	Project 0 Kubernetes Kubernetes Configuration • Master-node Communication • Load Balancing in Kubernetes • Ingress/Egress Rules Review Topics	

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	• Users • File Permissions					
Week 3 - SRE Introduction	Project 0 Service Level Topics Site Reliability Engineering • What is an SRE? • What is a Service Level Agreement? • What is a Service Level Objective? • What is a Service Level Indicator? • What is an Error Budget? Service Level Objective/Indicator • What makes for a good Service Level Objective? • What makes for a good Service Level Indicator?	Project 0 Logging Logging Basics • Why Log? • What to Log? • Logging Levels Logback Configuration • Logback Introduction • Appenders • Encoders • Root • MDC implementation	Project 0 Incident Management Incident Management: Overview • Incident Management Introduction • Trigger conditions • Incident Management: Mitigation & Resolution • Incident Management: Live Notes Incident Management: Leadership • Incident Commander • Communication Lead • Ops Lead Postmortem • Postmortem Introduction • Postmortem: when is it necessary? • Blameless culture • Summary Data • Action Items • Lessons Learned • Timeline	Project Presentation Monitoring-Observability Grafana • Grafana Introduction • Grafana configuration • Dashboarding Promtail • Promtail introduction • server configuration • log position tracking configuration • log pushing configuration • scrape configurations Loki • Loki Introduction • Loki setup • connecting to Grafana • viewing tailed logs	Monitoring-Observability Prometheus • Prometheus Introduction • Prometheus configuration • Common metrics (counters, rates) • connecting to Grafana • Recording Rules • Alerting Rules • Alerting properties (precision, recall, detection time, reset time) • Alerting Strategies Alertmanager • Alertmanager introduction • Alertmanager configuration	
Week 4 - AZURE (AZURE Fundamentals)	Project 1 Azure Introduction Azure Orientation • What is Azure? • Azure account and Subscriptions	Project 1 Azure Virtual Networks Azure Virtual Networks • Virtual Networks	Project 1 Azure SQL Databses Azure SQL Databases • Overview of Azure SQL Databases • Connectivity	Project 1 Azure Blob Storage Azure Blob Storage • Azure Blob Storage Introduction • Configuring Azure	Project 1 Azure Load Balncer Azure Load Balancer • Azure Load Balancer Overview • Public vs Private	

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	• Azure regions and availability zones Portal vs CLI • Portal vs CLI • Cloud Shell overview Azure Identity Services Azure Active Directory(AD) • Azure AD Introduction • Creating Azure AD Users • Creating Azure AD groups • Role Based Access Control (RBAC) Azure Resources • Resource groups • Assigning RBAC roles • Tagging resources • Azure Resource Manager (ARM)	Overview • Create a Virtual Network • Subnets and Address Spaces • On-prem Connectivity with VPN Gateway Azure Virtual Machines Azure Virtual Machines • VM Sizes and Images Overview • Create and Connect to Linux or Windows VM • Network Interfaces and Public IPs • Managed Disks and Storage Options Azure VM Scale Sets • Overview of Scale Sets • Automatically Scale VMs Based on Rules • Load Balancer Integration • Autoscale Based on Metrics Azure Network Security Groups • Network Security Groups Overview • Security Rules for Inbound and Outbound Traffic	options and drivers • Configure firewall rules • Enable encryption and auditing Azure Cache for Redis • Overview of Azure Cache for Redis • Create a Redis cache instance • Access Redis from app code • Choose caching eviction policies • Enable data persistence	Blob Storage containers • Hosting static websites Azure CDN • Azure CDN Overview • Cache invalidation and caching policies. • Azure CDN with Azure Load Balancer (ALB) as the origin. • Geo-restriction • Geo Restriction • Real-time logs and analytics • Shared Access Signatures (SAS) and Azure AD Authentication	Load Balancers • Load Balancing Rules • Health Probes • Load Balancer Options (Basic & Standard) Azure Application Gateway • Azure Application Gateway Overview • Sticky sessions • Cross-zone load balancing • SSL certificates Azure Front Door • Azure Front Door Overview	
Week 5 - Azure (AZURE Advanced)	Project 1 Azure App Services Azure App services • Azure App Services Overview	Project 1 Azure Kubernates Service (AKS) Azure AKS • AKS Clusters	Project 1 Azure Container Instances(ACI) ACI • ACI Overview	Project 1 Azure DNS Azure DNS • DNS Overview • Domain	Project 1 Azure Messaging Services Azure Service Bus • Introduction to Messaging in Azure	

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	• Azure App Service Environments • Azure App Services CLI & Deployment Process • Deployment Modes • App Service Deployment Slots • Azure App Service Lifecycle • App Service Cloning and Migration	• Creating and Managing AKS Clusters • AKS- Deploying Applications • AKS- Auto Scaling • AKS Rolling Updates • Azure Container Registry • Integrations and Extensibility	• Creating and Managing Conatiner Instances • Multi container Groups • Scaling with ACI • ACI and AKS Integration • ACI Lifecycle Management • Using Azure Container Registry (ACR) with ACI • Security	Management • Record Types • TTL • Traffic Management • Health Checks • Custom DNS Zones • Security • Pricing	• Azure Service Bus Overview • Azure Service Bus Queues • Queue Access Policy • Messgae Visibility Timeout • Dead Letter Queues • FIFO Queues • Delay Queues Azure Event Grid • Azure Event Grid Overview • Azure Event Grid and Azure Service Bus - Fan-Out Pattern Azure Stream Analytics • Azure Stream Analytics Overview • Data Streams • Producers & Consumers • Solution patterns	
Week 6- Azure (Azure Advanced, Azure Functions)	Project 1 Azure Monitoring Services Azure Monitor • Overview • Features: Metrics, Logs, Dashboards, Alerts, Anomaly Detection, Proactive Recommendations • MultiCloud Support Application Insights: • Application Insights: Overview • Features Azure Log Analytics	Project 1 Azure Functions Serverless Fundamentals • Serverless Benefits • Introduction to Serverless Computing • Serverless Computing Architecture Azure Functions • Intro to AZURE Functions • Azure Functions Architecture • Azure Functions Features	Project 1 Azure API Management Azure API Manegement • Overview of API Management Services • Benefits of using Azure API Management Azure API Management Features • API Gateway • Developer Portal • Security	Project Presentation Azure Devops Azure Devops • Introduction to Azure Devops • Review Continuous Integration/Continuous Delivery (CI/CD) • Azure Devops architecture Azure Pipelines • What is Azure Pipelines? • Azure Pipeline Tasks • Templates	Azure Cosmos DB Cosmos DB • Overview of CosmosDB • NoSQL vs SQL Databases • DynamoDB Core Components (Tables, Items, and Attributes) • Primary Keys (Partition Key and Sort Key) • Multimodel Database • Automatic Scaling • Partitioning • Indexing	

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	• Overview • Features • Integration with other Monitoring Tools • Azure Metric Advisor • Azure Monitor for VMs • Azure Arc for Servers	• Azure Functions Development	• Monitoring & Analytics • Transformations Azure AD Azure AD • Introduction to Azure AD • Azure AD User Authentication • Authentication Flows • JWT	• Variables • Parameters • Secrets • Triggers How to Use Azure Pipelines • Define Pipelines Using YAML Syntax • Define Pipelines Using the Classic Interface Create Azure Devops Pipeline	• Data modelling • Cosmos DB and Azure Functions Integration	
Week 7 - Terraform, Ansible and GenAI fundamentals.	Project 2 Terraform Terraform Fundamentals • IaC • Installing Terraform • registry • main.tf • resource • modules • local vs remote state • basic syntax • common TF commands	Project 2 Terraform Terraform Advanced • modules • variables • provider • data sources • null resource & Local Execution • TF console • workspaces • interpolation • maps & lookups • templates • outputs • functions • tainting/updating resources • conditionals	Project 2 Ansible Ansible Fundamentals • Ansible Setup • Ansible CLI • control node • inventory • hosts • playbook • modules • tasks • variables • Ansible Best Practices • dynamic inventory • collections • Ansible case study	Project 2 Prompt-Engineering AI-Orientation • ML Introduction • AI Introduction • GenAI Overview Prompt-Engineering • Prompt Engineering Introduction • Zero-shot Prompting • Few-shot prompting • Constraints • Fine-tuning and Conditioning • Interaction and Dialog State • Instructions and Guidelines • Hallucinations • Responsible Usage • Security Prompt Engineering Review LLM-Introduction	Project 2 Recap & Review • Hallucinations AI Review AI-Tooling AI-Tooling-Orientation • AI Tooling Overview • GenAI for Developers • AI Pair Programming Overview • Codeium Overview • Hands-on Intro to Prompt Engineering for Code • Using Copilot, Codeium, Code Whisperer (TBD which one) • AI Prompting Techniques and Best Practices • Integration with IDE	

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				LLM-Overview • LLMs (GPT, BERT, Claude, Llama, Copilot, Codeium) • Use cases for LLM • LLM best practices • Security considerations		
Week 8 - AI Tooling and Security & Project Review	Project 2 AI-Tooling-Code-Generation • Use Cases and Best Practices for GenAI Code Generation • Using GenAI for Code Generation AI-Tooling-UnitTest-Generation • Use Cases and Best Practices for GenAI Unit Tests • Using GenAI for Testing AI-Tooling-Documentation-Generation • Use Cases and Best Practices for GenAI Documentation • Using GenAI for Documentation AI-Tooling-Code-Analysis • Use Cases and Best Practices for GenAI Code Analysis • Using GenAI for Code Analysis AI-Tooling-Code-Optimization • Use Cases and Best Practices for GenAI Code Optimization	Project 2	Project 2	Project 2	Project Presentation	

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	• Using GenAI for Code Optimization AI-Tooling-Responsible-Use • Responsible Uses Overview • AI Tools for Code Review • Searching Codebases with GenAI • Assessing Generated Content Quality AI-Tooling-Security • Overview of Security Benefits/Risks with GenAI • GenAI Security Analysis • Common Security Problems/Solutions with GenAI • Gen AI Security Best Practices • Security-Minded Development AI Tooling Capstone AI Tooling Review					

PROJECT	TECHNOLOGIES
Project 0	Python, Git, Agile, CI/CD, Docker, Kubernetes
Project 1	Azure VM, Azure SQL Databases, Azure Blob Storage, Azure Virtual Network, Azure AD
Project 2	Azure Functions, Azure Blob Storage, Azure API Management, Azure Pipelines, Terraform, Ansible