SkillsCompétences Canada
Vancouver2022

CONTEST DESCRIPTION

Cloud Computing

TEAM CANADA

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1 TECHNOLOGY

In response to the evolving labofur market and changing skill needs, the Government of Canada has launched the new Skills for Success (former Essential Skills) model defining nine key skills needed by Canadians to participate in work, in education and training, and in modern society more broadly. SCC is currently working with Employment and Social Development Canada (ESDC) to bring awareness of the importance of these skills that are absolutely crucial for success in Trade and Technology careers. Part of this ongoing initiative requires the integration and identification of the Skills for Success in contest descriptions, projects, and project documents. The next phase and very important aspect of our Skills for Success (SfS) initiative is to provide a Skills Report Card to each competitor at the Skills Canada National Competition. The purpose of the report card is to inform the competitor about their current level of nine identified Skills for Success based on their competition scores. With this knowledge, the competitor will be made aware which skill may require improvement. Full implementation is expected in the next Skills Canada National Competition.

The following 9 skills have been identified and validated as key skills for success for the workplace in the legend below:

[1]Numeracy, [2]Communication, [3]Collaboration, [4]Adaptability, [5]Readingt, [6]Writing, [7]Problem Solving, [8]Creativity and Innovation, [9]Digital

These Skills for Success have been identified in section 2.4 and/or 3.2 of your Contest Description and if applicable, in your Project and supporting documents.

2 CONTEST INTRODUCTION

2.1 Description of the associated work role(s) or occupation(s)

https://www.skillscompetencescanada.com/en/skill_area/cloud-computing/

2.2 Purpose of the Challenge

To utilize the AWS Cloud Computing environment in a number of real-world scenarios to evaluate each competitor's skills and to recognize excellence and professionalism in the field of Cloud Computing;

2.3 Duration of contest

12 hours

2.4 Skills and Knowledge to be tested.

The competition evaluates a competitors competence in the design, implementation, and management of information technology infrastructure via a public cloud environment. Backgrounds and areas to be tested include but are not limited to server and storage administration; infrastructure creation and management, and cloud security.

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents on the Skills/Compétences Canada website

DOCUMENT	DATE OF DISTRIBUTION
Project	January 2022
Competition Schedule	February 2022

3.2 Tasks that may be performed during the contest

SECTION		(%)
1	**Work organization and management[7, 9]**	**10**
	The individual needs to know and understand: • The relationships between different technologies and areas of expertise used in a public cloud deployment. • Interoperability requirements for each aspect of a systems deployment within a public cloud provider. • The requirements of each group of stakeholders in the design of an IT solution using public cloud services. • Methods of Integrating an organization's best practices and public cloud offerings to create application-specific deployments. • Methods of evaluating, comparing and contrasting the wide range of possible solutions for each IT implementation • Methods of determining which solution is optimal for each organization taking into account internal best practices, business requirements, existing infrastructure, and resource expertise.	

	The individual shall be able to: • Identify common deployment models with public cloud providers and how those models can apply to organization-specific requirements. • Identify opportunities and create migrations plans to phase-in public cloud deployments and reduce risks. • Create highly available, scalable, and secure IT architectural designs specific to each application, taking into account compute, storage, networking, database management, and deployment requirements. • Take advantage of public cloud provider solutions to reduce operational burden associated with service deployments.	
2	**Communication and interpersonal skills[2]**	**10**
	The individual needs to know and understand: • How to communicate across organizational teams to identify infrastructure requirements and architectural opportunities. • How to engage with business units to identify best practices for deployment and create a migration path to the public cloud. • Methods and techniques for working with business stakeholders in meeting organizational and compliance related goals. • The bases for creating department and team-specific infrastructure designs that take advantage of public cloud capabilities and value-add services.	
	The individual shall be able to: • Discover and document key requirements and how they relate to public cloud offerings. • Discover and document technology-specific opportunities to leverage public cloud offerings. • Translate business goals and objectives into briefs, designs, and plans, and present such documents to stakeholders and management teams.	

	• Clearly map departmental and technology-specific requirements and goals to public cloud solutions. • Using project-specific migration plans, facilitate the implementation of an organizational transition to public cloud resources.	
3	**Problem solving, creativity and innovation[7,8]**	**20**
	The individual needs to know and understand: • The role and importance of each layer of infrastructure design including, compute, storage, networking, database, caching, and application. • Various technology solutions to meet business objectives (e.g. different relational database solutions as well the use of NoSQL technologies for transactional data workloads) • Various storage capabilities including block level replication, network block device sharing, shared/clustered file systems, object storage, and storage caching solutions. • Various network architectures to facilitate communication with existing/legacy applications and environments. • Automation methodologies and opportunities commonly used throughout the technical community.	
	The individual shall be able to: • Evaluate, select and implement foundational cloud computing services such as compute, network, and storage. • Evaluate, select and implement advanced cloud computing services such as managed data services, caching services, and automated scaling and availability features. • Evaluate, select and implement various network-related technologies to infrastructure design such as network communication protocols, sub netting, NAT, DNS, VPN, broadcast networking, and dynamic routing protocols.	

	• Automate infrastructure creation and modification through the use of scripting or programming, and the use of infrastructure templates.	
4	**Security[9]**	**20**
	The individual needs to know and understand: • Best practices for securing systems and networks using authorizations, authentications, and accounting. • Best practices for developing secure deployment and the ongoing monitoring of traffic and assets. • Best practices for deploying, monitoring, and maintaining secure infrastructure. • Best practices for the creation and deployment of secure application designs for public cloud infrastructure. • The demarcation of responsibility for security between the cloud provider and the public cloud customer. • The importance and intent of network traffic and resource isolation	
	The individual shall be able to: • Design and implement authentication processes at a departmental and organizational level, controlling access to public cloud administrative capabilities and system access. • Develop policies and procedures for systems and application access to public cloud interfaces and services. • Implement policies and procedures for auditing of public cloud activities and access. • Create internal prescriptive guidance and requirements for procedures necessary to create, update, remove and access public cloud infrastructure and resources. • Implement service and technology specific security controls on resources running within a public cloud environment as well as utilization of services provided by an IaaS vendor.	

	• Engage with business, development, and leadership staff to identify, recommend, and implement security best practices while ensuring an efficient user experience.	
5	**Reliability, scalability, and elasticity[6,9]**	**20**
	The individual needs to know and understand: • How business requirements translate to operational objectives in relation to resource constraints addressed by the use of public cloud features and services. • The principles and architectures for different availability/deployment models such as disaster recovery, high availability, blue-green deployments, global load balancing, and pilot light deployments. • Application and service-specific availability requirements and nuances as they relate to systems and application availability. • Organizational and departmental business and technology goals related to system survivability and data durability in the event of different failure scenarios. • How application, system, and network metrics can be used to define the implementation of available, scalable, and elastic architectures. • Different applications, systems, and protocol nuances and requirements necessary to automate the scaling, durability, and availability of infrastructure.	

	The individual shall be able to: • Record, analyse, and interpret application, system, and network data to facilitate the recommendation of an appropriate architecture that sufficiently utilizes scalability and elasticity to meet the variable demands of internal and external users and systems. • Implement different availability, scalability, and durability models in accordance with application and system design requirements. • Design availability models that meet the business requirements of an organization, taking into account allowed recovery time and allowable service interruption parameters. • Utilize public cloud services and features to aid the design and deployment of availability, durability, and scalability requirements.	
6	**Performance and optimization[7,9]**	**10**
	The individual needs to know and understand: • Different infrastructure performance opportunities available through solutions such as caching, resource right-sizing, and vendor-provided services. • Performance requirements and possible bottlenecks with infrastructure design. • Vendor-specific pricing opportunities as they relate to different public cloud offerings for optimizing costs. • Opportunities available during the creation of new applications or redesign of existing applications to take advantage of public cloud offerings such as server-less computing and microservice orchestration.	

	The individual shall be able to: • Analyse and interpret performance metrics from compute, storage, network, and application levels for use in public cloud infrastructure design objectives. • Utilize performance tuning techniques and packages to ensure optimal resource utilization. • Implement a microservice strategy to capitalize on technology advances in areas like container development. • Pursue the decoupling of services to allow the separation of application components to facilitate a service-oriented architecture. • Recommend and implement database and storage solutions that best fit the needs of an application.	
7	**Operational considerations[7,9]**	**10**
	The individual needs to know and understand: • The requirements of systems and applications in order to maintain functionality and availability. • System, network, and application metrics and how they apply to infrastructure durability, availability, and performance. • Response requirements, protocols, and procedures for various incidents including, security, availability, and performance-related incidents	
	The individual shall be able to: • Implement monitoring solutions to generate alerts and automate responses to various incidents. • Implement centralized metric collection and analysis for systems, network, and application information. • Implement a process to continually improve architectural designs by automating infrastructure configuration updates. Continuously monitor and review systems and applications for design improvement opportunities. • Continuously test for failure and design for resiliency. • Ensure cloud configurations are kept current and versioned.	

	• Keep up to date with new services, procedures, and technology solutions offered by public cloud providers in order to optimize current and future deployments with the latest technology opportunities and best practices.	
	Total	100

Skills for Success – [2]Communication, [6]Writing, [7]Problem Solving, [8]Creativity & Innovation, [9]Digital

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada

- Suitable computer hardware
- Internet Connection
- Pencil and Paper

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

4.2 Equipment and material provided by the competitor

- N/A

4.2.1 Toolboxes Guidelines

One of the objectives of SCC is the sustainability of the Competition. As a result, the toolboxes brought by Competitors will be restricted to the following maximum specifications.

Competitors are not permitted to bring a toolbox.

4.3 Required clothing provided by the competitor

- Business Casual Dress

5 HEALTH AND SAFETY

5.1 Safety program

SCC has implemented a comprehensive safety program as health and safety is an integral part of our competitions. Our safety program includes guidelines and procedures to make the work environment in each skill area safer.

5.1.1 Safety manual

As part of our program a safety manual has been created in order to monitor and document health and safety within each skill area. It includes a definite plan of action designed to prevent accidents. The safety manual will be provided for every skill and these instructions must be followed and respected by all participants and officials at the SCNC.

5.1.2 Safety workshop

During orientation, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety, and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

5.2 List of required personal protective equipment (PPE) provided by competitors

- N/A

5.3 COVID-19 Protocol

The COVID-19 guidelines will be shared as soon as they are available.

The COVID-19 guidelines will be subject to change based on the BC COVID-19 guidelines in place at the time of the competition.

6 SAFETY REQUIREMENTS

6.1 Safety workshop

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

6.2 List of required personal protective equipment (PPE) provided by Skills/Compétences Canada

- Not required

6.3 List of required personal protective equipment (PPE) provided by the competitor

- Not required

Note: Contestants who do not have the required protective gear will not be allowed to participate in the contest

7 ASSESSMENT

7.1 Point breakdown

Note: This list is subject to change.

TASKS	/100
AWS Gameday	60
AWS Jams	40

8 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during the competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Use of technology - personal laptops, tablets and mobile phones	• NTC committee members are allowed to bring USB/memory sticks into the NTC Room. USB/memory sticks will be allowed to be taken outside of the meeting room at the end of each day. • Competitors – Competitors are not allowed to bring USB/memory into the workshop.
Drawings, recording information	• Internet scripts and information is ok.

9 ADDITIONAL INFORMATION

9.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service might not be guaranteed.

9.2 Ties

- Tiebreaker #1: Highest Score in GameDay event
- Tiebreaker #2: Highest Number of Completed Jams

- Tiebreaker #3: Fastest Time to complete Jams

9.3 Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, NTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

9.4 Competition rules

Refer to the competition rules of the Skills Canada National Competition which can be found on our website.

10 TEAM CANADA EXPERT

Richard Spencer

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Sophie Courchene at sophiec@skillscanada.com