



CONTEST DESCRIPTION

Cloud Computing

POST-SECONDARY

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1 THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

The Government of Canada has updated the previous Essential Skills framework to the new Skills for Success model in response to the evolving labour market and changing skill requirements. This model outlines nine fundamental skills Canadians need to thrive in work, education, training, and daily life.

Skills/Compétences Canada aims to highlight the importance of these skills, vital for success in trade and technology careers. Competitors can see how Skills for Success are integrated into contest descriptions, projects, and project documents. Recognizing these skills during the competition helps competitors match tasks with specific skills necessary for success and understand how these skills apply within their trade or technology programs and future careers.

The nine key Skills for Success, validated for workplace success, are:

1. Numeracy
2. Communication
3. Collaboration
4. Adaptability
5. Reading
6. Writing
7. Problem Solving
8. Creativity and Innovation
9. Digital

These Skills for Success are detailed in sections 2.3 and/or 3.2 (to be completed by SCC) of your Contest Description and, if relevant, 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 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 competitor's competence in the design and implementation of information technology infrastructure in a public cloud environment^{7,9}
- The public cloud environment used is Amazon Web Services.

Skills for Success – ⁷Problem Solving, ⁹Digital

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 | December 2024 |

3.2 Tasks that may be performed during the contest

The Cloud Computing skill covers foundational Cloud Computing services and baseline knowledge, network admin, systems admin, application deployment (including databases, system security, etc.) Students with systems admin skills, network admin skills and database deployment skills would be able to participate in the competition.

- **Systems Design/Deployment** – When designing and deploying a web application, the fundamental building blocks of being able to scale is understanding how to implement an architecture that can scale. Competitors will need to showcase their understanding in decoupling the database from the application, utilizing additional tools such as monitoring and auto-scaling.^{7,9}
- **Network Design** – When scaling a web application and breaking up the workload into different tiers and services, the network design must ensure that only servers and services that should be public remain public. To ensure network security, the application should communicate with services on private networks where possible.^{7,9}
- **High Availability** – In today's web applications high availability is an essential aspect. Competitors will need to keep this in mind and implement ways to ensure the web application can deal with issues and still remain a running application.⁷
- **Scalability** – In order to keep costs low when there is low usage and scale to meet high traffic to provide a consistent user experience, the application must scale or the application must be scalable. Scalability in every aspect of the web application allows the application to grow only where needed. Correctly implemented, this goes hand in hand with monitoring and automation.⁹
- **Automation** – Automation is one of the fundamental building blocks of being able to scale a web application. Automation of application deployment process, infrastructure provisioning automation and self-configuration.⁹

- **Security** – When scaling a Web Application, security at every layer of the application is essential. Where network traffic is allowed to come from, who can access the servers, what permissions are applied to the servers and users, who has access to the databases and data. Security can be applied on every aspect of a Web application.⁷
- **Monitoring** – Monitoring has become the most important aspect of a web application. Being able to collect metrics and understand how the web application is behaving at all layers. Being able to use those metrics to scale up and down and use those metrics to make smart decisions and automation where possible¹

Skills for Success – ¹Numeracy, ⁷Problem Solving, ⁹Digital

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada

- Table
- Chair
- Water Station
- Internet connection

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

- Competitors are required to bring their own device and software. Each competitor can choose their own device so their workflow and process are to what they are familiar with.
- If competitors are bringing a computer or laptop from their school (instead of their personal computer), please ensure that the computer is unlocked so documents and possibly software can be saved/installed to the hard drive and technology support can be provided onsite. This may require access to CMOS settings.
- Minimum Recommended Hardware:
 - Wired Ethernet Connection or appropriate network adapter
 - 4 GB of RAM
 - 100 GB Storage
 - Windows 10
 - HDMI output or appropriate cabling
- Required software
 - Google Chrome
 - Putty

- AWS CLI

4.3 Required clothing provided by the competitor

- No special requirements

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 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 Skills/Compétences Canada

- No PPE required

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

- No PPE required

Note: Competitors who do not have the required protective equipment will not be allowed to participate in the competition

6 ASSESSMENT

6.1 Point breakdown

Note: This list is subject to change.

| TASKS | /100 |
|-------------------------|------|
| Systems/Network Design | 20 |
| High Availability | 20 |
| Scalability | 20 |
| Automation (Deployment) | 20 |

7 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 – USB, memory sticks – internet access | NTC Members – NTC Members are allowed to bring USB/memory sticks into the NTC Meeting 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. Competitors – Competitors can use public internet resources; private resources are not allowed (GitHub, Docker, Google Drive, etc) |
| Use of technology – personal laptops | NTC Members – NTC Members are allowed to bring laptops into the NTC Meeting Room. Laptops will be allowed to be taken outside of the meeting room at the end of each day. Competitors – This is a bring your own device (BYOD) competition so the competitors can have their laptops and can take them with them after each day. |
| Use of technology – personal cameras | NTC Members – NTC Members are allowed to bring cameras into the NTC Meeting Room. Cameras will be allowed to be taken outside of the meeting room at the end of each day. Competitors – No cameras are allowed in the workshop until the completion of competition on day four. |
| Use of technology – mobile devices | NTC Members - No electronic devices are to be brought to any Competitors workstations under any circumstances unless with the approval Competitors – Electronic devices (Including mobile phones) must stay in Competitor bags (switched off or on silent) within the lockers provided. No electronic devices are to be brought to Competitor's workstations under any circumstances unless with the approval |
| Source file/notes | Competitors – No notes may be brought into the workshop under any circumstances. All notes made |

| | |
|-------------------|--|
| | at the Competitor workstation must remain on the Competitors desk at all times. No notes may be taken outside of the workshop. |
| Equipment failure | Competitors – In the occurrence of equipment failure Competitors must notify aNTC member by raising their hand. The NTC Member will take note of the time that the Competitor is not able to make use of their equipment. Any time lost due to equipment failure will be provided to the Competitor at the end of the standard Module time. No additional time will be granted for work not saved prior to the equipment failure. |

8 ADDITIONAL INFORMATION

8.1 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 may not be guaranteed.

8.2 Ties

- Tiebreaker #1: Total Number of Clues used
- Tiebreaker #2: Time to complete JAM challenges
- Tiebreaker #3: Overall Gameday score

8.3 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.

8.4 Competition rules

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

9 NATIONAL TECHNICAL COMMITTEE MEMBERS

| MEMBER ORGANIZATION | NAME |
|---------------------------|------------------------------------|
| Newfoundland and Labrador | Richard Spencer – Chair |
| Quebec | Mathieu Bergeron-Legros – Co-Chair |
| Saskatchewan | Alex Wang |
| Ontario | Sasipriya Arun |
| New Brunswick | Bruce McClary |

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve (nathaliem@skillscanada.com).