

J8DY 46 – Computing Project (SCQF Level 6)

Assessment

Instructions for Assessors

Introduction

The Computing Project Unit (SCQF Level 6) provides learners with an opportunity to apply their existing knowledge and skills in a practical, team-based project. The purpose of this unit is to develop a range of essential skills required to work effectively in the IT industry, including project planning, teamwork, collaboration, and self-evaluation.

This unit involves working in teams of 2–4 learners to create a solution to a given project brief. The project brief will outline a routine problem requiring a computing-based solution, and learners will work collaboratively to analyse, plan, design, implement, test, and evaluate their solution.

Learners will document their contributions throughout the project and reflect on their development of meta-skills, such as self-management, communication, and innovation. While teamwork is essential, each learner will be assessed individually, and their contributions to the project must meet the required standards for SCQF Level 6.

The project can be based on various computing contexts, such as programming, cyber security, data analysis, AI, game development, and/or PC and network setup. The scope and complexity of the project will be appropriate for the level and sufficient to justify a team approach.

Assessors will provide limited guidance and will evaluate learners based on both product and performance evidence, ensuring the required standards are met.

This project offers learners valuable experience in applying their skills in a real-world context while preparing them for further study or employment in the computing field.

Before the Project Begins

1. Assessors should create a detailed project brief based on the generic example provided in the Instructions for Candidates and Project Brief. The specific brief should reflect the learners' prior studies and available resources. It must specify the area(s) of computing (e.g., programming, data analysis, or PC building), a realistic scenario, the essential criteria for a successful final product, any constraints (such as time and resources), and a clear timescale with deadlines for milestones. The project scope must align with SCQF Level 6 standards.

2. Assessors must assign learners to teams of two to four members, ensuring groups reflect a mix of skills and abilities. Teams should not be self-selected, and smaller cohorts may require teams with learners from different levels (e.g., levels 4, 5, and 6). In such cases, each learner's contribution must align with their respective level's standards.
3. Learners should be provided with access to the SOLAR assessment, which includes Instructions for Candidates and the four assessment tasks: planning, designing, developing and testing, and evaluating. Assessors may choose to introduce all tasks upfront or sequentially. It must be made clear that, while the project is team-based, each learner is assessed individually. Each learner must make a significant contribution to all evidence items, even if specific tasks are led by certain team members. Individual performance is critical - learners can meet the evidence requirements regardless of the team's overall success, but inadequate personal contributions will result in failure to meet standards.
4. Depending on the learners' prior experience, some teaching and learning may be required around the project development process, including project planning, design documentation, testing, and evaluation. This teaching should be delivered in general terms, not specific to the given project brief. Learners should also have the opportunity to explore the meta-skills framework and understand the relevance of meta-skills in the IT industry. Resources such as the Skills Development Scotland Meta-Skills Toolkit and My World of Work website can be used to help learners understand how meta-skills apply in real-world computing contexts.

During the Project

During the project, assessors should monitor progress. While there is no requirement for regular check-ins, assessors may choose to meet with teams at key stages of the project to review progress, check adherence to the project plan, and confirm that all team members are contributing meaningfully.

Assessors should observe team dynamics, collaboration, and individual contributions, recording evidence to support final evaluations. Guidance or assistance must not be provided during the project, as learners are expected to work autonomously (in teams). They should take full ownership of their project and be encouraged to solve problems independently.

Assessors should also monitor documentation, such as the project plan, design documentation, and test plan, ensuring that these are being completed effectively and align with the requirements of the project brief.

Assessments 3 and 4 require the Assessor to observe the candidate and complete the relevant observation checklists. These checklists, along with detailed instructions, are included in the assessment materials.

While it is recommended that the checklists be completed and uploaded during the assessment, they may also be uploaded at the time of marking.

Guidance for writing a Project Brief

The following generic project brief is provided to assessors and learners. It is intentionally broad to accommodate a wide range of projects from all aspects of computing, including Artificial Intelligence (AI), emerging technologies, hardware, game design and development, networking, programming, data science, and cyber security.

This generic project brief does not include specifics on each individual project, as these will be determined by each centre's own timings, resources, and learner needs. It is important that assessors provide additional specific information to accompany this generic brief to ensure it is tailored to the context of the learner group, the available resources, and any constraints (e.g., time, budget, equipment) that might affect the project.

Assessors should work closely with learners to refine the project focus and objectives, ensuring that the project is both challenging and achievable within the given timeframe and with the available resources. The specific details (such as the scope of the problem, client needs, and technological requirements) should be added to the project brief based on the area of computing chosen.

At Level 6, the project can either focus on one area with a complex problem and great depth, or it can cover two areas with less complex problems. This flexibility allows learners to either explore a specific area in great detail or work across two different areas, with each having a simpler scope.

For example, the project could focus on one area of computing, tackling a more complex problem that requires a detailed, advanced solution. This might involve creating an in-depth AI model to automate a business process, developing a complex software application, or designing a secure and scalable network with advanced features.

Alternatively, the project could cover two areas of computing, each with a less complex problem. For example, learners might build and configure PCs for a small business and create a basic network for the same client, or they could design a simple game while also exploring an AI model to provide insights based on user data.

Generic Project Brief

Scenario:

Your team has been contracted by Tech Solutions Ltd., a technology consultancy that supports small businesses in adopting digital tools and systems. The company has identified a need for an innovative solution to address a specific problem faced by one of their clients.

Your team will work collaboratively to plan, design, develop, and test a solution that meets the needs of the client. The solution must be high-quality, functional, and meet the criteria outlined below.

The final product must:

- Address the client's needs as outlined in the chosen area of computing.
- Be functional and demonstrate a clear purpose and usability.
- Be accompanied by documentation that outlines the project plan, design, testing process, and evaluation.
- Be tested thoroughly, with results documented in a completed test plan.
- Be presented in a way that demonstrates how it meets the client's requirements.

The project can focus on any of the following areas of computing, agreed upon in negotiation with your assessor:

- Artificial Intelligence: Develop a complex AI model to automate a business process or analyse data.
- Game Design/Development: Create a game or interactive application that engages users or showcases gamification techniques.
- PC Build: Assemble and configure PCs to meet the specific needs of a small business.
- Network Build: Design and implement a secure, scalable network for a client.
- Programming: Develop a complex software application that solves a specific problem or improves efficiency.
- Data Science: Analyse and visualise data to provide actionable insights for decision-making.
- Cyber Security: Develop a solution to improve the security of sensitive client information.
- Emerging Technologies: Explore an innovative solution using a cutting-edge technology of your choice.

Your assessor will provide further information on specific expectations and detailed requirements for your chosen project.

Example Specific Project Brief for Hardware and Networking Project

This specific project brief focuses on a networking solution for a small business, but you should adjust the details based on the learner group and available resources. Ensure that the scope and complexity of the project are suitable for SCQF Level 5 learners, with clear milestones and tasks to be completed within the given timeframe.

Client: Tech Solutions Ltd.

Scenario:

Your team has been contracted by Tech Solutions Ltd. to assist a charity client that has been donated a set of old PCs. The charity is looking to create a safe and productive workspace for young people to complete homework, browse the internet, and engage in some light gaming. Your team will be responsible for researching the appropriate hardware specifications for refurbishing these PCs, ensuring that they meet the needs of the users. Once the PCs are refurbished, you will set them up with an operating system, LibreOffice, and antivirus software.

Additionally, the PCs need to be connected to one another in a secure, scalable network that can support the needs of the charity's workspace. Your team will be responsible for testing and refurbishing the PCs, and then designing and setting up the network that will allow these devices to connect, share resources, and provide a secure environment for the users.

The final product must:

- Provide 5 PCs refurbished to appropriate hardware specifications based on their intended use.
- Provide internet access to all five PCs.
- Connect five desktop computers to a networked printer using appropriate network devices and topology.
- Ensure that the network is secure, with a focus on safe access to shared resources and internet browsing.