Edexcel GCE

Applied Information and Communications Technology

Unit 9: Communications and Networks

January 2010

Scenario

Please open this material immediately. It should be distributed to candidates at least three working weeks before the examination.

Note: There are no practice files for this examination.

The description overleaf will be used as the scenario for the above specification, and will be reissued with the examination paper. This scenario should be used for the purposes of preparing candidates for the examination. This material must not be taken into the examination.

Further details are in the Instructions for the Conduct of Examinations, available from the Edexcel website for this qualification and subject.

Edexcel will not accept any request for special consideration should candidates be given the incorrect scenario for the examination they are sitting.

Turn over

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Scenario

Dornton Castle

In 1880, Amos Dornton bought the ruins of a medieval castle originally built in 1352 and renamed it Dornton Castle. Amos had a few parts of the castle repaired as a folly and had a large manor house built nearby to live in.

Over the years, each generation of Dorntons extended the property, adding gardens, a stable block, servants' quarters, and other buildings. Dornton Castle is now a rambling collection of buildings and outdoor spaces extending over several acres.

The current owners are Christopher and Sarah Dornton, who live in one wing of the manor house. They manage the rest of Dornton Castle as a tourist attraction, conference centre, and event venue.

Their latest venture is to hold Live Action Role Play (LARP) events called 'Warriors, Wizards, and Witches'. Groups of people hire sections of Dornton Castle and then act out fantasy adventures using rubber swords, spell powders, etc.

Christopher and Sarah have observed several LARP events and have realised that some aspects of the adventures could be improved to attract more customers.
These include:
* each group spending a lot of their own time setting up their adventure before it begins
* having to use members of the group wearing masks to represent non-human characters, animals, ghosts, etc.
* not being sure who a spell is aimed at and what effect it should have.

Christopher has some experience with special effects from working in the film industry and Sarah has produced theatrical events at the castle. They think that there is a gap in the market and want to use technology to create more exciting adventures. They will then charge people to take part, rather than simply hiring out the space.

Each adventurer will still wear their own LARP costume and equipment. They will be provided with a headset and gloves. These will be connected by cables to a small backpack containing batteries and a WiFi transmitter-receiver. The backpacks will also contain radio-frequency identification (RFID) transponders that allow the adventurers' positions to be located.

Each headset will contain projectors that can show images through a pair of augmented reality goggles to create the illusion that the adventurer is looking at an object. The headset and gloves will contain positional sensors that detect head and hand movements.

The Dorntons have already signed a contract with another company to provide adventurer packs (gloves, goggles, headsets, WiFi transmitter-receivers, transponders, and augmented reality software).

Dornton Castle staff will dress up and act as human opponents in the adventures. Fantasy creatures will be projected by the headsets. Spells will be cast by hand gestures, with their effects being projected, accompanied by suitable sounds. The system will also control special effects such as lights, sounds, and smoke.
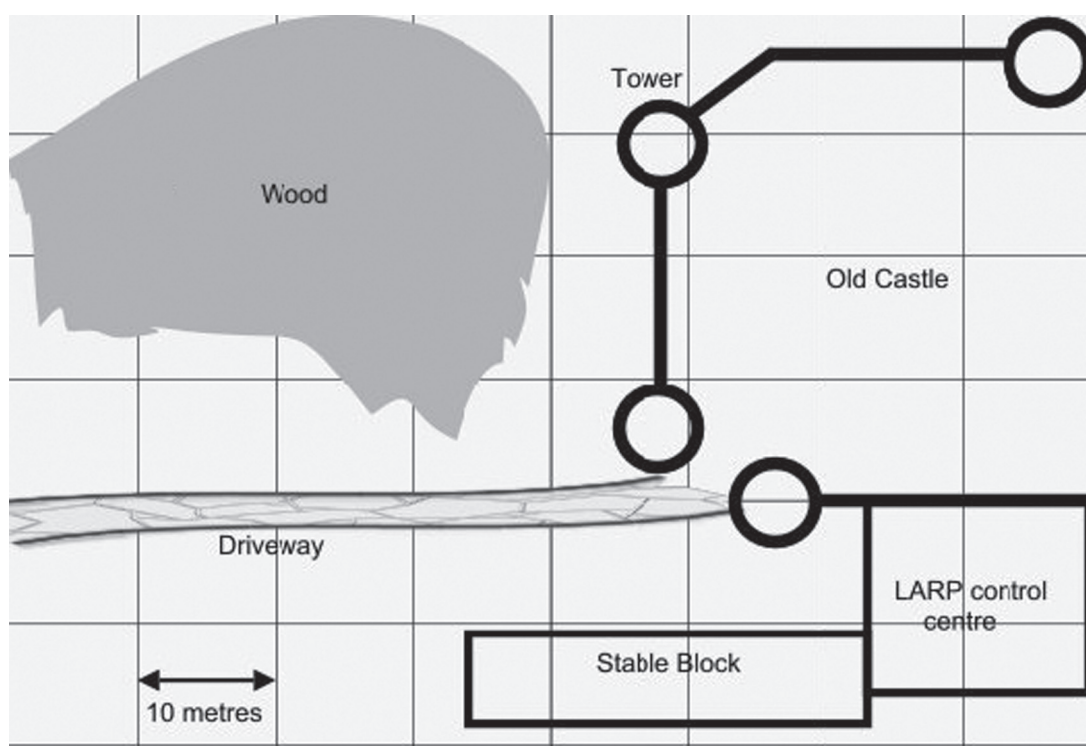
The Dornton Castle staff will have similar headsets to the adventurers, except that they will project information that will help in the running of the adventure, such as a map showing where people are. Their headsets will also have a microphone and earpiece so that staff can talk to each other. Their gloves

will be the same as the adventurer ones as they must also be able to cast spells.

A new LARP control centre will be located in an empty building that contains a single 15 metre square room. The control centre will be connected to an existing LAN which serves the rest of the buildings in Dornton Castle. The building has a power supply but no I.T. facilities and is 20 metres from the existing LAN server.

The LARP adventure area, shown on the sketch map, contains a small wood, a stable block, and part of the old castle. Each of the four castle towers has an underground cellar, a ground floor, and two other floors. Walkways along the walls can be reached using doors in the towers at the level of the upper floors. There are ample power outlets in the adventure area but no network infrastructure or equipment.

Sketch map of the LARP adventure area

Your project

You are an I.T. consultant and have been hired by the Dorntons to help them to set up the new LARP system.

The Dorntons' priorities for the new system are that it must be:
- **reliable.** There is a part-time technician who deals with the Conference Centre when it is being used. He will be taken on full-time so that he can look after the LARP system as well
- **easy to maintain.** When things wear out or go wrong, repairs and replacements should be simple to perform
- **robust.** Parts of the system will be situated outdoors
- **value for money.** This is a business venture, so budgets must be set, justified, and kept to.

Christopher and Sarah are competent I.T. users but rely on their technician to configure and maintain the Dornton Castle I.T. systems.

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