Level 3 Systems architecture (7540-041/7630-350)

Systems and Principles
Assignment guide for Candidates
Assignment C

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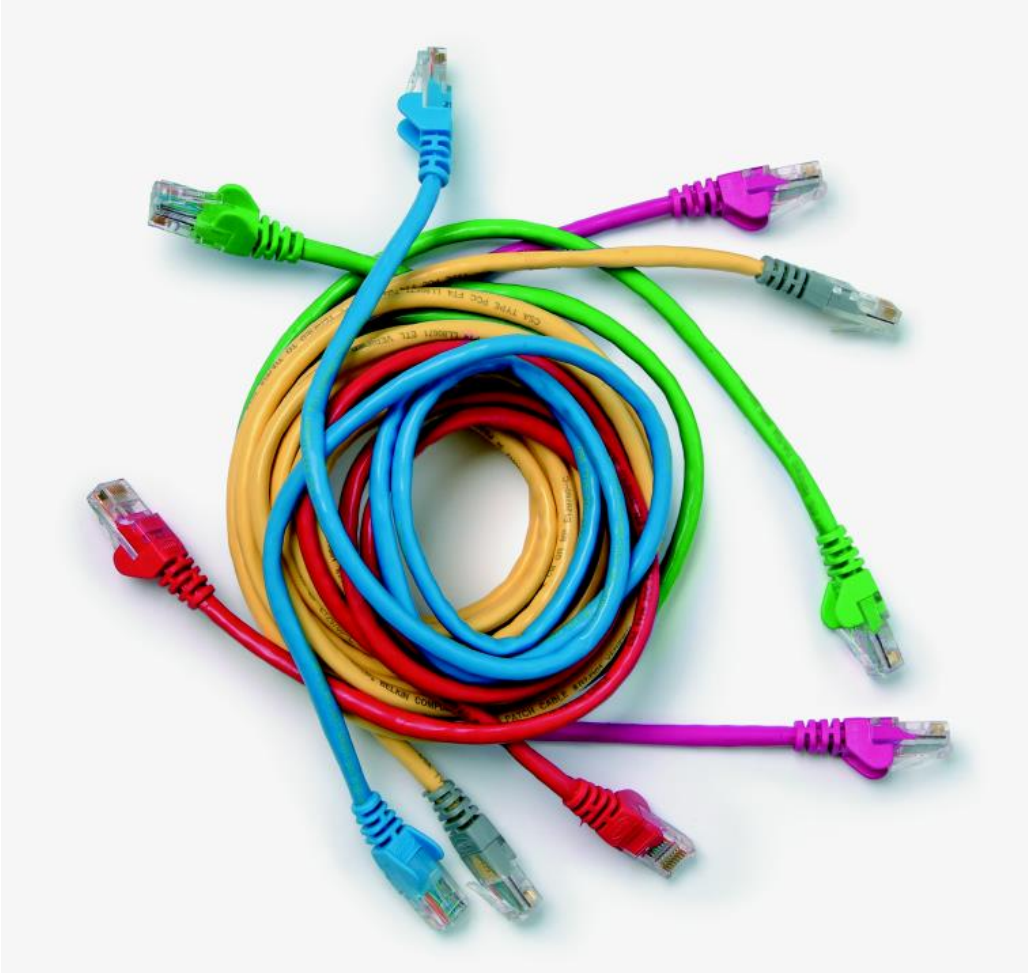

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Introduction – Information for Candidates

About this document
This assignment comprises all of the assessment for Level 3 Systems architecture (7540-041/7630-350).

Health and safety
You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance
The recommended time allowance for this assignment is **3 hours**.

Level 3 Systems architecture (7540-041/7630-350)
Candidate instructions

Candidates are advised to read **all instructions** carefully before starting work and to check with the Assessor, if necessary, to ensure that you have fully understood what is required.

Time allowance: 3 hours

This assignment is made up of **four** tasks

- **Task A** – provide information about a basic computer system
- **Task B** – provide information about a multiprogramming computer system
- **Task C** – provide information about communication processes in a distributed system and transaction processing in mainframe systems
- **Task D** – provide information about distributed applications and transaction processing in mainframe systems

Scenario

You have just graduated as an advanced apprentice, and are seeking a new job as a graduate IT technician, as part of the interview process you have been given the following questions as a test.

The test may contain diagrams which may be hand drawn or produced on a computer.

Task A – provide information about a basic computer system

Please use the Answer Sheet provided to complete Task A.

1 Describe and give an example of how EBCDIC and **three** further numbering systems store information.

2 Describe the role of **three** input devices, **two** output devices and **three** storage devices.

3 Describe the operation of **three** peripheral devices using correct technical terminology.

4 Produce a diagram describing the operation of the Fetch Execute Cycle.
Please note that this can be hand drawn or word processed.

5 Produce a block diagram of the Central Processing Unit (CPU) describing the function of **each** component drawn.
Please note that this can be hand drawn or word processed.

Task B – provide information about a multiprogramming computer system

1 **Take screen prints of the following:**
For your evidence created in Task A1 or using a text file provided by the Assessor, copy and paste it into your text editor. Then:
- save the text edited work as *41assign* using the text editing programme provided with the Operating System
- using the command line interface, create a new folder in your home directory called *printing* and copy *41assign.txt* to this folder
- using the command line interface rename *41assign.txt* to *yourinitials.txt*

using the GUI, delete the original *41assign.txt*

2 **Take a screen print of the following:**
Using your operating system, open and run the system restore function and restore the computer to any previous point
Once the screen print has been taken, stop and close the disk defragmenter

3 Please use the Answer Sheet provided to complete Task B3.
Briefly describe the operation of **three** of the security features which are typically built into a network operating system.

4 Please use the Answer Sheet provided to complete Task B4.
Briefly describe the role of **all** of the processes listed below that are involved in an Operating System:
- memory management techniques
- file management (directory structure, file structure, file access control, storage methods)
- storage protection methods
- resource allocation and scheduling
- input and output control.

5 Please use the Answer Sheet provided to complete Task B5.
Within the Operating System you are using, identify and briefly describe how to end a programme or process that has deadlocked/stopped working.

Task C – provide information about communication processes in a distributed system and transaction processing in mainframe systems

1 Outline **three** of the functions and operations of *distributed operating systems.*

2 Describe the purpose of the OSI seven layer model in relation to networking and communication of data between entities in distributed operating systems.

Task D – provide information about distributed applications and transaction processing in mainframe systems

1 Outline the operation and function of a database mainframe system in terms of transaction processing and explain the terms COMMIT and ROLLBACK.

2 Outline briefly the evolution of distributed systems.

3 Outline data distribution in terms of data replication and data fragmentation and the overheads of locking data for concurrent access.

When you have finished working:

- Sign each document above your name and label all removable storage media with your name.
- Hand all paperwork and removable storage media to your assessor.

If the assignment is taken over more than one period, all paperwork and removable media must be returned to the test supervisor at the end of each sitting.

End of assignment

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