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

Systems and Principles
Assignment guide for Candidates
Assignment A

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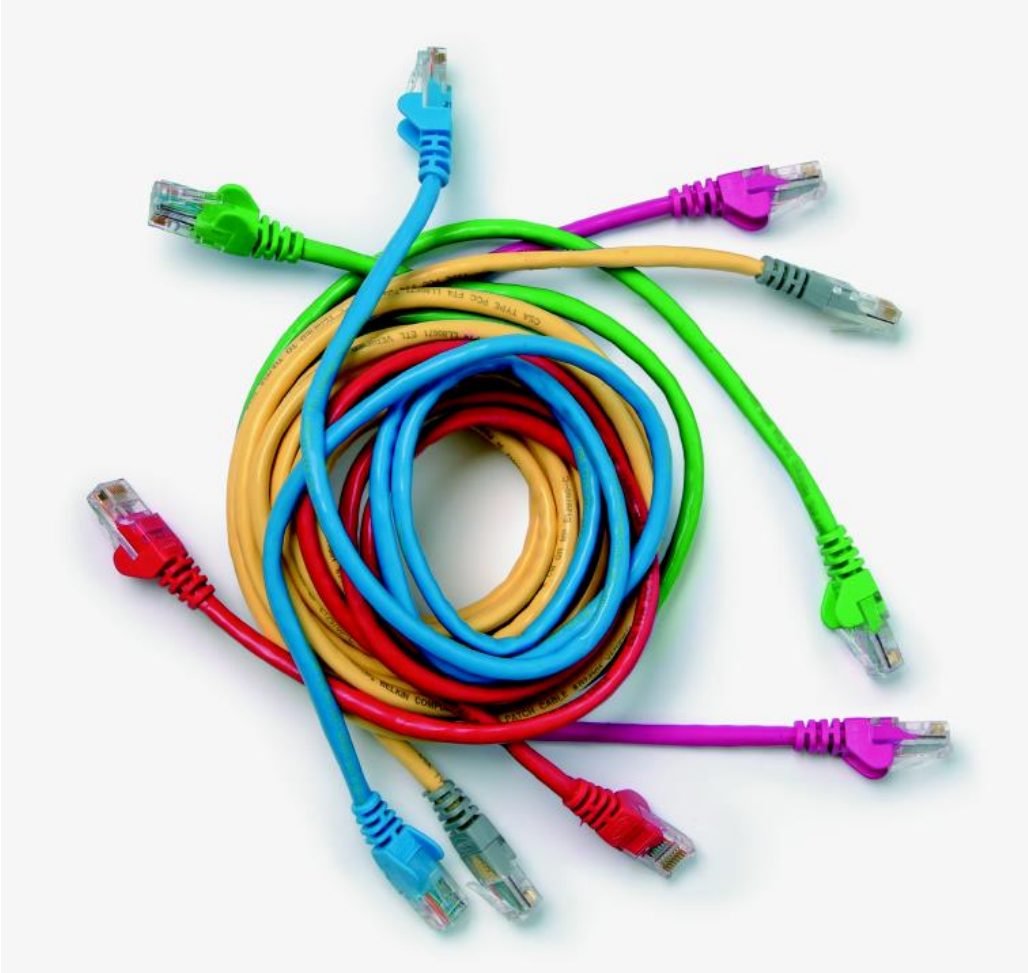
September 2017
Version 4.0



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Contents

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

Assignment A

Introduction – Information for Candidates 2

Candidate instructions 3

Level 3 Systems architecture (7540-041/7630-350)
Assignment A
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 your 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 are employed by Global Systems as an advanced apprentice. You have been asked to assist in providing information about computer systems architecture to be used on the company website as a factual resource for future apprentices and other employees. It is important that you explain the technical terms in simple, everyday language where possible. Please note that you will **not** be expected to produce a website, just information which will be published on the website.

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

Task A – provide information about a basic computer system

1 Describe and give examples of how the following number systems store information in a computer:
- binary
- hexadecimal
- ASCII
- EBCDIC.

2 Describe the role of **three** input devices, **two** output devices, **three** storage devices and **three** peripheral devices, giving examples in each case.
When describing peripherals, ensure you use the correct technical terminology relating to each device.

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

4 Produce a block diagram of the Central Processing Unit (CPU) describing the function of each component.
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, copy and paste it into your text editor. Then:
- save the text edited work as *41assign* using your text editing package
- 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 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 disk defragmenter.
Once the screen print has been taken, stop and close the disk defragmenter

3 Briefly describe the operation of **three** of the security features listed below which are typically built into a network operating system:
- passwords
- access rights
- permissions
- firewalls.

4 Briefly describe the role of **four** 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
- deadlock
- resource allocation and scheduling
- input and output control.

5 Within the operating system you are using, identify and briefly describe how to end a program 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.

2 Explain the terms COMMIT and ROLLBACK.

3 Outline briefly the evolution of distributed systems.

4 Outline data distribution in terms of:

- data replication
- data fragmentation
- over heads of locking data for concurrent access.

Note

- At the conclusion of this assignment, hand all paperwork and removable media to the test supervisor.
- Ensure that your name is on the removable media and all documentation.
- If the assignment is taken over more than one period, all removable media and paperwork must be returned to the test supervisor at the end of each sitting.

End of assignment

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