Xi'anJiaotong-LiverpoolUniversity

西交利物浦大学

PAPER CODE	EXAMINER	DEPARTMENT	TEL
CSE108		Computer Science and Software Engineering	

2nd SEMESTER 2015/16RESIT EXAMINATIONS

BACHELOR DEGREE – Year 2

Operating Systems Concepts

TIME ALLOWED: 2 Hours

INSTRUCTIONS TO CANDIDATES

1、 Total marks available are 100.

2、 Answer all questions.

3、 The number in the column on the right indicates the marks for each question.

4、 Answershould be written in the answer booklet(s) provided.

5、 The university approved calculator - Casio FS82ES/83ES can be used.

6、 All the answers must be in English.

1. Explain the following terms:

1.1 Deadlock. (10 marks)

1.2 Swap-space management. (10 marks)

1.3 Need-to-know principle. (10 marks)

2. Consider the following set of processes, with the length of the CPU burst time given in milliseconds:

Process	Burst Time
P1	3
P2	2
P3	8

The processes are assumed to have arrived in the order P1, P2, P3 all at time 0.

2.1 Draw Gantt charts that illustrate the execution of these processes using FCFS. Compute the average waiting time. (10 marks)

2.2 Draw Gantt charts that illustrate the execution of these processes using SJF. Compute the average turnaround time. (10 marks)

3. Consider a disk queue holding requests to the following cylinders in the listed order: 90, 150, 20, 10, 60, 67. Assume the disk head is at cylinder 55 and moving downward through the cylinders

3.1 Using the SSTF scheduling algorithm, what is the order that the requests are serviced? (10 marks)

3.2 Using the SCAN scheduling algorithm, what is the order that the requests are serviced? (10 marks)

4. Discuss the advantages and disadvantages of the following three methods: (30 marks)

(1) A dedicated hardware security module, or trusted element, that is outside of the main system board.

(2) A hardware block located within the main system board which manages cryptographic operations and key storage.

(3) A general purpose processing engine that is placed alongside the main processor, and which uses custom hardware logic to prevent unauthorized access to sensitive resources.

END OF EXAM PAPER