

## Assignment 7 – Mass-Storage (5%)

### Introduction

Assignment 7 contributes 5% towards your final course grade and the assignment total is 15 marks. You should begin Assignment 7 after completing the materials in Module 11; it is due at the end of Module 12. Check your Course Schedule for the precise due date. Directions for submitting Assignment 7 to your Open Learning Faculty Member for grading can be found in the Assignments Overview tab. An assignment marking criteria and your assignment submission details follows at the end of this document.

In this assignment, you will investigate how mass storage works.

### Questions:

1. Consider a disk queue holding requests to the following cylinders in the listed order: 116, 22, 3, 11, 75, 185, 100, 87. What is the order that the requests are serviced, for the algorithms below, assuming the disk head is at cylinder 88.
  - a. FCFS scheduling.
  - b. SCAN scheduling (arm is moving up from cylinder 88).
  - c. C-SCAN scheduling (arm is moving up from cylinder 88).
  - d. Which algorithm gives the best result (services all the requests with the minimum amount of movement).
2. Consider a disk queue holding requests to the following cylinders in the listed order: 116, 22, 3, 11, 75, 185, 100, 87. What is the order that the requests are serviced, for the algorithms below, assuming the disk head is at cylinder 88.
  - a. FCFS scheduling.
  - b. SCAN scheduling (arm is moving down from cylinder 88).
  - c. C-SCAN scheduling (arm is moving down from cylinder 88).
  - d. Which algorithm gives the best result (services all the requests with the minimum amount of movement).

3. Consider a disk with a sector size of 512 bytes, 2000 tracks per surface, 50 sectors per track, five double-sided platters, and average seek time of 10 msec.
  - a. Calculate capacity of a track in bytes? What is the capacity of each surface? What is the capacity of the disk?
  - b. How many cylinders does the disk have?
  - c. Give examples of valid block sizes. Is 256 bytes a valid block size? 2048? 51,200?
4. Suppose we have a 10000 RPM disk has 8 heads and 480 cylinders. It is divided into 120- cylinder zones with the cylinders in different zones containing 200, 240, 280, and 320 sectors. Assume each sector contains 4096 bytes and a seek time between adjacent cylinders of 2 msec. What is the total disk capacity?

## Report Submission Details

You need to submit a report that consists of answers to the listed questions.

Assignment Marking Criteria	Weighting
Q 1	/4
Q 2	/4
Q 3	/3
Q 4	/4
<b>Total</b>	<b>/15</b>