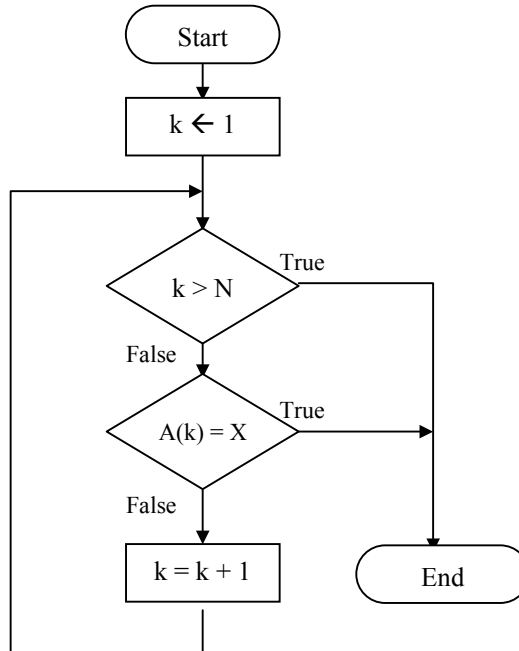


2005 ICT Specialists Proficiency Examination
Computer Programming

Sample Questions

Part 1 - General Bodies of Knowledge

1. Integers are stored in the first through nth elements of array A (where $N > 1$). The flowchart below checks to see which element contains the value X. Which answer below describes the result obtained by executing this flowchart?



- a. If the value X does not exist in the array, “1” is stored in k.
b. If the value X does not exist in the array, N is stored in k.
c. If the value X exist in two elements, the first element and the nth element, “1” is stored in k.
d. If the value X exists in two elements, the first element and the nth element, N is stored in k.
2. Which of the following logical expressions is identical to $X \cdot \bar{Y} + \bar{X} \cdot Y$?
- a. $(X + Y) \cdot (X + Y)$
b. $(X + \bar{Y}) \cdot (X + \bar{Y})$
c. $(\bar{X} + Y) \cdot (\bar{X} + Y)$
d. $(X + \bar{Y}) \cdot (X + Y)$
3. What does the “window” field in a Transport Control Protocol segment indicate?
- a. Number of 32-bit words in the header.
b. Number of the called port.
c. Number used to ensure correct sequencing of the arriving data.
d. Number of octets that the sender is willing to accept.
4. Which Windows NT command-line switch does not verify files as they are copied to the setup boot floppy disk?
- a. /C
b. /F
c. /O
d. /x

5. What transport protocol exchanges datagrams without acknowledgements or guaranteed delivery?
 - a. UDP
 - b. TCP
 - c. IRQ
 - d. LLC

6. What OSI layer establishes, manages and terminates session between applications?
 - a. Presentation
 - b. Session
 - c. Application
 - d. Transport

7. What is the equivalent binary number of the hexadecimal number BEEF₁₆?
 - e. 1001 1110 1110 1101₂
 - f. 1011 1101 1101 1111₂
 - g. 1011 1110 1110 1111₂
 - h. 1010 0110 0110 1101₂

8. What separates the part of a session?
 - a. Checkpoints
 - b. Spacers
 - c. Pointers
 - d. Sequence numbers

9. What is the time between the user's request and the computer's reply called?
 - a. Concurrent time
 - b. Response time
 - c. Allocation time
 - d. Run time

8. Charles Babbage invented the:
 - a. Mark I
 - b. Difference engine
 - c. Adding machine
 - d. ENIAC

Sample Problem

Part 2 - COBOL

ABC Car Park Incorporated, a three-level parking area, each can accommodate 100 vehicles, provides parking services to the public. All parking slots in the first level should be filled up first before any vehicle can park in the next level. If a slot in the lower level becomes available, it should be filled first before any vehicle can park in the next available slot.

Write a program that will monitor all incoming and outgoing vehicles. The program should determine the duration of parking of any vehicle and charge them according to the given rates below. An incoming receipt should be issued upon entry (indicating all information given below), which will be presented upon exit, where an outgoing receipt will also be issued (incoming and outgoing receipts are illustrated below). The program should also generate a daily report (illustrated below). All information should be stored in a database for future reference.

Database File: CARPARK

FIELDNAME	DESCRIPTION
brand	Vehicle brand (e.g. BMW, Mercedes Benz, Toyota, Honda, Mitsubishi, etc.)
plateno	Vehicle plate number
time-in	Date and time the car enters the car park Format: dd/mm/yy hh:mm:ss
time-out	Date and time the car leaves the car park Format: dd/mm/yy hh:mm:ss
teller	Last name of teller
level	Parking level number
amtdu	Total amount due

Parking Rates

P30.00 - for the first three hours
P10.00 - for succeeding hours or fraction of an hour

Incoming / Outgoing Receipt

ABC Car Park Incorporated Incoming / Outgoing Receipt	
Time-in / Time-out	: <sysdate>, <systemtime>
Vehicle Brand	: <brand>
Plate Number	: <plateno>
Parking Level	: <level>
Amount Due	: <amtdu>

Sample Problem

Part 2 - C LANGUAGE

Write a program that will convert a Roman number into its equivalent Hindu Arabic number, and vice versa. The program should ask the user what type of number to convert (Roman or Hindu Arabic). The program should display the number to convert and the converted number, and asks the user if he would want to convert another number.

Sample output:

Convert a number into:

- [1] Roman
- [2] Hindu Arabic

Choice [1]

Enter the Roman number to convert:

MCMLXXIV

The Roman number **MCMLXXIV** is equal to **1974** in Hindu Arabic.

Try again? <Y/N>: [Y]

Convert a number into:

- [1] Roman
- [2] Hindu Arabic

Choice [2]

Enter the Hindu Arabic number to convert:

2197

The Hindu Arabic number **2197** is equal to **MMCXCVII** in Roman number.

Try again? <Y/N>: [N]

**2004 ICT Specialists Proficiency Examination
Systems Analysis & Design**

Sample Questions

1. One of the fact-finding techniques used in systems investigation is _____ . It is a form of conversation/questioning in which information is elicited.
 - A. inquisition
 - B. interview
 - C. interrogation
 - D. examination

2. Comparing Costs and benefits, and finding the _____ factor that equates the two, shall give the Internal Rate of Return (IRR).
 - A. present value
 - B. net present value
 - C. cumulative present value
 - D. cumulative net present value

3. As a process, system design goes through two stages, namely: logical design and physical design. How do you differentiate logical design from physical design?

4. Customers who borrow at least 5 videotapes a week and in addition, either have a good payment history or have referred at least 2 new customers are given priority treatment. Otherwise, they are given normal treatment. On the other hand, customers who have referred at least 5 new customers regardless of the number of videotapes borrowed may be given priority treatment.

Do any of the following: Structured English or Decision Tree for the above process.