NagpurStudents

www.nagpurstudents.org

"IT'S HARD TO BEAT A PERSON WHO NEVER GIVES UP."

Babe Ruth, American professional baseball player

B.E. (Computer Science Engineering) Fourth Semester (C.B.S.)
System Programming

P. Pages : 3

Time : Three Hours

‖‖‖‖‖‖‖‖‖‖‖
* 1 3 1 4 *

NIR/KW/18/3382

Max. Marks : 80

_____

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.

1. a) What is system programming? Explain the components of system programming. **6**

b) For the following ALP show the entries in ST, LT, BT, & MDT. Also write the machine language program at the end of pass 2. **8**

```
PROGRAM      START  0
             USING * 15
             LA 15, SETUP
             SR TOTAL, TOTAL
AC           EQU 2
INDEX        EQU 3
TOTAL        EQU 4
DATABASE     EQU 13
SETUP        EQU *
             USING SETUP, 15
             L DATABASE, = A (DATA1)
             USING DATAAREA, DATABASE
             SR INDEX, INDEX
LOOP         L AC, DATA I (INDEX)
             AR TOTAL, AC
             A AC, = F '5'
             ST AC, SAVE (INDEX)
             A INDEX, = F '4'
             C INDEX, = F '8000'
             BNE LOOP
             LR 1, TOTAL
             BR 14
             LTORG
SAVE         DS 2000F
DATA AREA    EQU*
DATA 1       DC F '25, 26, 97, 101 ----,
             [2000 numbers]
             END
```

OR

2. a) Draw & explain the flowchart & algorithm of pass-2 of assembler. **8**

b) Explain IBM 360/370 machine architecture in detail. **6**

3. a) For the following CULP, Prepare MNT, MDT, ALA databases & also write expanded source code. **7**

```
MACRO
& lab1 INCR & arg1, & arg2, & arg3
& lab1    A 1, & arg 1
          A 2, & arg 2
          A 3, & arg 3
          MEND
       ⋮
       ⋮
LOOP 1 INCR data1, data2, data3
       ⋮
       ⋮
LOOP 2 INCR data3, data2, data1
       ⋮
       ⋮
data 1 DC F '5'
data 2 DC F '6'
data 3 DC F '7'
```

b) What are the basic task that any macroprocessor must perform? How do you define a macro in a program? Give a general format. **6**

OR

4. a) Explain with the flowchart of simple one pass macro-processor. **7**

b) Explain the concept of conditional macro expansion with example. **6**

5. a) Draw a detail flowchart for pass 1 of Direct linking Loader of IBN 360 machine. **6**

b) Show the entries in ESD, TXT & RLD cards for the following prog. **8**

```
JOHN        START
            ENTRY SUM, DATA
            EXTRN LOOP, POINTER
            BALR 15, 0
            USING *, 15
            SR 4, 14
            L 1, FOUR
            A 2, FOUR
            ST 2, FOUR
            BR 14,
FOUR        DC F '4'
LOOP        DC A (SUM + 4)
POINTER DC A (LOOP – DATA)
            DC A (POINTER – LOOP)
            DC A (POINTER)
            END
```

6. a) Write the difference between loader & linker.   **7**

    b) Explain in detail the general loading scheme with advantages & disadvantages.   **7**

7. a) Explain in detail the format of common object file.   **7**

    b) Explain with suitable diagram the concept of link editor.   **6**

OR

8. a) Write short note on **any three.**   **13**

    1) SCCS.
    2) Symbolic debugger.
    3) GNU Debugger.
    4) String table.

9. a) What is device drivers? Explain the necessity of the device driver.   **7**

    b) Explain in details the steps for the installation of device driver in UNIX.   **6**

OR

10. a) Explain in detail with neat diagram the types of device driver in UNIX.   **7**

    b) Differentiate between device drivers for UNIX & WINDOWS.   **6**

11. a) What is lexical Analyzer? How the tokens are recognized by lexical phases? Explain.   **7**

    b) Explain any one of the following with suitable program.   **6**
    i) LEX   ii) YAAC

OR

12. a) Explain various phases of compiler in detail. Draw the block diagram & explain the functionality of each phase with suitable example.   **13**

****

NagpurStudents

The best time to plant a tree was 20 years ago. The second best time is now.

~ Chinese Proverb

Nagpur Students