VALLIAMMAI ENGINEERING COLLLGE
DEPARTMENT OF INFORMATION TECHNOLOGY

CS2304 - SYSTEM SOFTWARE

Question Bank
Sem/Year: V/III

UNIT – I

Part A:

1. What is the purpose of test device instruction?
2. How is a floating point value represented using exponent in SIC?
3. Draw the instruction formats of SIC computer.
4. Define System Software and System Program.
5. What is indexed addressing mode?
6. Define upward compatibility in systems.
7. Distinguish between direct addressing and indirect addressing.
8. What are the different registers used in SIC?
9. What is base relative addressing?
10. What is the use of SVC instruction in SIC?
11. What are the additional registers provided in SIC / XE than SIC?
12. Differentiate base relative addressing & program counter relative addressing.
13. What is the name of X & L register in SIC machine and also specify its use.
14. What is the difference between LDA # 3 and LDA THREE?.
15. What is conditional code instruction?
16. What are the types of I/O instructions available in SIC machine?
17. Write the sequence of instructions to perform the operation BETA=ALPHA +5 Using SIC/XE instruction.
18. Give the instruction format of SIC/XE machine.
19. What is format 3 & format 4 instruction in SIC/XE machine?
20. Differentiate Translator & Interpreter.

Part B:

1. With a neat diagram , explain the machine architecture of SIC .
2. Discuss about SIC / XE architecture.
3. Write short notes on
    i)   Data and Instruction formats
    ii)   Addressing modes of SIC / XE?
4. Object code generation for SIC and SIC / XE programs.
5. What are the data structures used in Assembler? Discuss how these structures are organized.

6. a) Write a sequence of instructions for SIC to set

VAL1 = VAL2 + INCR-2
VAL3 = VAL4 + INCR-2
Illustrate how the same calculation could be performed on SIC / XE.
   b) The variables V1, V2 and V3 are assumed as an array of 100 words each. Write
      a sequence of instructions for SIC to add together the corresponding elements of V1,
      V2 and store in V3.
7. With instruction formats, explain the instruction set of SIC / XE.
8. Explain the various addressing modes supported by SIC and SIC/XE with example.
9. Write a program for sample indexing & looping operation in SIC & SIC/XE machine.
10. a.) Write a sequence of instruction for SIC to set ALPHA equal to the product of BETA
       and GAMMA.
    b.) Suppose alpha is an array of 100 words.Write a sequence of instruction for SIC/XE
        to set all 100 elements to zero.

UNIT - II

Part A:

1. What is the need for an assembler directive?
2. What is the use of location counter?
3. What is the need for a modification record?
4. Can an assembler have a single pass? What are the advantages and limitations?
5. What are the functions of EXTREF and LTORG assembler directives?
6. What is program relocation? Why is it required?
7. With reference to assembler brief about Literals and Expressions.
8. What is meant by forward reference?
9. What is the difference between literals and immediate operand?
10. What is near jump &far jump?
11. What is a symbol table? How is it useful?
12. Consider the following sequence
            X   EQU   Y
            Y   EQU   Z
            Z   RESW   1
    Is a two-pass assembler can resolve? Justify your answer.
13. What is the data structure used to organize the symbol table and operation code table in a
    simple assembler? Why is it preferred?
14. Differentiate the assembler directive RESW & RESB
15. List the use of following in assembler
    i.SYMTAB
    ii.LOCCTR
    iii.OPTTAB
    iv.LITTAB
16.What is the use of assembler directive START?
17.Define Relocatable program.
18.Give the format of Header record, Text record, End record, Modification record.

19. Name the two methods of performing relocation.
20. What are the functions performed in Pass 1& Pass 2 of a 2 Pass assembler?

Part B:

1. Explain the various machine dependent features of assembler?
2. Discuss the detailed design of pass 1 of a two-pass assembler with algorithm. Mention clearly the formats of the data structures used. Include all the assembler directives that needed to be processed in pass 1.
3. Explain Pass 2 of a 2 Pass assembler with algorithm.
4. Explain in detail about the machine independent features of assembler.
5. Explain the concept of program relocation.
6. Explain the design of one pass assembler with required data structures & algorithm.
7. Briefly discuss about multi pass assembler.
8. Explain in detail the features of MASM assembler.
9. Explain the different instruction format & addressing modes used in the assembler.
10. Write the algorithm for Pass 1 and Pass 2 of a 2-Pass assembler.

UNIT - III

Part A:

1. What is the function of a linkage editor?
2. What is meant by relocation? How does the assembler pass on this information to the loader?
3. What is a bootstrap loader? Why is it required?
4. What is dynamic linking? Mention its functions.
5. What is linking?
6. What is the use of ESTAB data structure in linking loader?
7. What are the advantages of dynamic linking?
8. What is the function of pass 2 of a loader?
9. List the statements present in a macro definition.
10. Give the difference between linking loader & linkage editor.
11. Mention the use of FIXUPP record.
12. What is EXDEF,EXTREF?
13. Write the algorithm for absolute loader.
14. What is bit mask?
15. What is automatic library call Or automatic library search?
16. What is a loader?
17. What is the purpose of relocation bit?
18. Mention the function of absolute loader.
19. What is load map?
20. What is the use of control section & external reference?

Part B:

1. Discuss the basic loader functions.
2. Briefly describe about Absolute Loader with algorithm.
3. Explain in detail how linkage editors are implemented in various machines. Differentiate linkage editors with linking loaders.
4. Briefly explain dynamic linking.
5. Discuss the detailed design of Program linking and relocation.
6. Briefly describe the machine dependent loader features.
7. Write the algorithm for Pass 1 of a linking loader and specify the data structure used by this loader.
8. Discuss in detail design of Pass 2 of linking loader.
9. Explain the different machine independent loader features in detail.
10. Discuss in detail about Bootstrap loader & MS DOS Linker.

UNIT IV

Part A:

1. What is the necessity of a Macro?
2. How do macros affect program development?
3. For a small code fragment to be used respectively in the program, how is it decided whether to implement it using a subprogram or macro?
4. How are local labels handled in macro processing?
5. What are the advantages of using line by line macro processor?
6. What are the functions of MASM macro processor?
7. Compare Macros and Subroutines.
8. What is the use of DEFTAB, NAMTAB and ARGTAB in macro processor?
9. How are macros defined?
10. What are positional parameters? How do they differ from keyword parameters?
11. What is macro time variable?
12. What is the symbol used to generate unique labels?
13. In the following macro definition,
    #define ABSDIFF(X,Y)[(X)>(Y)?(X)-(Y) : (Y)-(X)]
    Give the expansion for ABSDIFF (I+1,J-5)
14. For the following macro definitions.
    #define DISPLAY (EXPR) printf(#EXPR "=%d\n",EXPR)
    Give the expansion for the macro invocation DISPLAY (I+J+1).
15. Expand the following.
    a. SUM MACRO &ID
    b. LDA X&ID->1
    c. ADD X&ID->2
    d. ADD X&ID->3
    e. STA X&ID->5
    f. MEND
    SUM A
16. Draw the structure of the ARGTAB.

17. What is meant by concatenation of macro parameter?
18. What is conditional macro expansion?
19. What is a pre-Processor?
20. Give any two examples of macro definitions in ANSI C.

Part B:

1. Explain the various machine independent macro processor features in detail.
2. Discuss the algorithm for a one-pass macro processor.
3. Write notes on (i) conditional macro expansion, (ii)Keyword parameters.
4. Briefly describe about (i)Concatenation of Macro parameters (ii) Generation of unique labels.
5. Briefly explain about (i) Recursive macro expansion and (ii) General purpose macroprocessor.
6. Explain in brief about Macro expansion.
7. Explain indetail about MASM macroprocessor.
8. Explain ANSI C Macroprocessor.
9. Explain with example the Macro Definition and Macro Expansion.
10. Explain the different data structures used in Macro Processor with an example.

UNIT V

Part A:

1. What is the importance of user interface?
2. What are various functions of a debugger?
3. List down the user interface criteria.
4. Why text editors are required? Mention the names of any four editors known to you.
5. What do you mean by Trace back?
6. What is the purpose of voice input devices?
7. What are the tasks performed by document editing process?
8. How the mapping of view buffer to a window is done?
9. What do you mean by tracing?
10. What is a placeholder?
11. What are the roles of a dialog manager?
12. What is execution sequencing?
13. Define interactive editor.
14. What is the purpose of editing filter?
15. What is the function of travelling component?
16. What are the two fundamental types of editor?
17. What is meant by filtering?
18. What are locator devices?
19. What are the desired features of User Interface?
20. What are the facilities provided by interactive debugging system?

Part B:

1. Explain any two system software tools highlighting their advantages and disadvantages? What are the various criteria of user interface?
2. List down the options provided by any debugger that you have used. Discuss briefly the possible design of this debugger.
3. Discuss clearly the design of the Functional components of a text editor.
4. Discuss about the functions & capabilities of Interactive debugging systems.
5. With neat diagram, explain the structure of an Editor.
6. (i)How are user interfaces useful? Explain
   (ii)Discuss the nature of user interface for an interactive debugger.