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Question bank- Embedded system concepts with ARM

1. Explain the ARM core data flow model with a neat diagram
2. Show the various fields in current program status register using a block diagram and explain the same.
3. Explain the different operating modes of ARM processor
4. What is pipelining? Show the different pipeline stages in ARM7, ARM9 and ARM10
5. Explain all the Arithmetic and logical instructions and illustrate with suitable example for each
6. What is pipelining? Illustrate it with an example.
7. Draw the basic layout of a generic program status register and briefly explain the various fields.
8. Illustrate the different operating modes of ARM processor.
9. Illustrate the different Data processing instructions in ARM.
10. Write an ALP Using ARM instruction to find the largest number in the array.
11. Determine the barrel shifter operation in ARM processor with suitable example
12. Discuss the load-store instruction with example.
13. Show the post condition for the following

a) PRE R0=0X00000000
R1=0X00000077
RSB R0, R1, #0

b)PRE R0=0X00000000
R1=0X00000005
ADD R0,R1,R1,LSL #1

c)PRE R1=0b1111
R2=0b0101
BIC R0,R1,R2

d) PRE cpsr=nzcvqiFt_USER
R0=0X00000000
R1=0X80000004
MOVS R0, R1 ,LSL#1

d) PRE cpsr=nzcvqiFt_USER
R0=4
R1=4
CMP R0,R9

e) PRE cpsr=nzcvqiFt_USER
R0=0X00000000
R1=0X00000000
R2=0XF0000002
R3=0X00000002
UMULL R0,R1,R2,R3

14. Discuss the load store instruction with respect to
    i) Single Register Transfer
    ii) Multiple Register Transfer
15. With example, explain the following ARM instruction
    i) TEQ ii) MVN iii) BX iv) BIC v) CMN
16. Write a short note on coprocessor instructions.
17. Explain program status register instructions with examples.
18. Explain all the comparison instruction with examples
19. Write a program for forward backward branch by considering an example
17. Implement an ALP using Arm Instruction set for finding the square of a number (1-10) using look-up table.

18. Implement an ALP using Arm Instruction set for finding the factorial of a number.
19. Implement an ALP using Arm Instruction set for finding the smallest of an array
20. Implement an ALP using Arm Instruction set to arrange an array in ascending order
21. Implement an ALP using Arm Instruction set to arrange an array in descending order