ARM Processor & Applications

Assignment 1

1. Explain different modes of operations in ARM.
2. Explain ARM programmer's model.
3. Explain ARM CPSR register format
4. Give the overview of ARM development tools.
5. Describe the principle features of the ARM architecture
6. Explain the data path activity in 3-stage pipeline architecture of an ARM.
7. Explain the data path activity involved to execute single and multi-cycle instructions in ARM 3 stage pipeline.
8. Explain data processing instruction.
9. Explain ARM branch and branch with link instructions
10. Explain software interrupt instructions supported by ARM.
11. Write a program that computes $6x^2-9x+2$ and leave the result in r2. Assume x is in register r3
12. Indicate whether the following instructions use pre or post indexed addressing modes.
    i. STR r6, [r4,#4] ii.LDR r3,[r12], #6 iii. LDRB r4,[r3,r2]!
    iv. LDRSH r12,[r6]
13. Calculate the effective address of the following instructions if the register r3=0x4000 and r4=0x20
    i. STRH r9, [r3,r4] ii. LDRB r8, [r3,r4,LSL #3] iii. LDR r7, [r3],r4
14. Explain THUMB data processing instruction
15. Explain THUMB branch and branch with link instructions
16. WAP to exchange ten 32-bit numbers between two memory location 400000000 and 50000000.
17. WAP to add two 32-bit numbers
18. WAP to find factorial of number 08h
19. WAP to multiply two 32-bit numbers using successive addition.
20. Explain following instructions in detail.

    i. MVN ii. LDMIA iii. STMDB iv. BIC v. TST vi. BNE

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