

## Tests & Quizzes

### Quiz 09

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#### Part 1 of 5 / 2.0 Points

Question 1 of 7  1.0 PointsWrite the equivalent translation of STMIA operation using IA, IB, DA, and DB suffixes ✓ STMIA**Answer Key:** STMIAQuestion 2 of 7  1.0 PointsWrite the equivalent translation of LDMEA operation using IA, IB, DA, and DB suffixes ✗ LDMIA**Answer Key:** LDMDB

#### Part 2 of 5 / 2.0 Points

Question 3 of 7  1.0 PointsWrite the equivalent translation of LDMDB operation using FD, FA, ED, and EA suffixes ✗ LDMFD**Answer Key:** LDMEAQuestion 4 of 7  1.0 PointsWrite the equivalent translation of STMIA operation using FD, FA, ED, and EA suffixes ✓ STMEA**Answer Key:** STMEA

#### Part 3 of 5 / 4.0 Points

Question 5 of 7  4.0 Points

What is the reverse assembly of 0xE9892080 machine language instruction?

The Op-Code of the instruction is: ✓ STMIBThe operands of the instruction are: ✗ SP, {R7, SP} .**Answer Key:** STMIB | STMFA, r9, { r7,r13 } | r9, { r13,r7 }

#### Part 4 of 5 / 8.0 Points

Question 6 of 7  8.0 Points

Assume that a **Full-Descending (FD)** stack is in use, appropriate stack space is already allocated to the stack, and the stack pointer is appropriately initialized.

Write ONLY **TWO** block moves ARM instructions (i.e., LDMxx and STMxx) to copy the content of the registers as shown below using ONLY IA, IB, DA, or DB notation (do not forget to include all operands).

R4 ← R3

R2 ← R1

R6 ← R5

I.e., If R1 = 111, R3 = 333, and R5 = 555, then after executing the two instructions, the values of R1, R3, and R5 will stay as they are while the value of R4 will be 333, the value of R2 will be 111, and the value of R6 will be 555.

The Op-Code of the 1st instruction is: ✓ STMDB

The operands of the 1st instruction are: ✓ SP!,\_{R3,\_R1,\_R5}.

The Op-Code of the 2nd instruction is: ✓ LDMIA

The operands of the 2nd instruction are: ✓ SP!,\_{R6,\_R2,\_R4}.

**Answer Key:** STMDB , SP!,{R1,R3,R5} | R13!,{R1,R3,R5} | SP!,{R1,R5,R3} | R13!,{R1,R5,R3} | SP!,{R3,R1,R5} | R13!,{R3,R1,R5} | SP!,{R3,R5,R1} | R13!,{R3,R5,R1} | SP!,{R5,R1,R3} | R13!,{R5,R1,R3} | SP!,{R5,R3,R1} | R13!,{R5,R3,R1} , LDMIA , SP!,{R2,R4,R6} | R13!,{R2,R4,R6} | SP!,{R2,R6,R4} | R13!,{R2,R6,R4} | SP!,{R4,R2,R6} | R13!,{R4,R2,R6} | SP!,{R4,R6,R2} | R13!,{R4,R6,R2} | SP!,{R6,R2,R4} | R13!,{R6,R2,R4} | SP!,{R6,R4,R2} | R13!,{R6,R4,R2}

## Part 5 of 5 / 4.0 Points

Question 7 of 7  4.0 Points

Assume that a **Full-Ascending (FA)** stack is in use, appropriate stack space is already allocated to the stack, and the stack pointer is appropriately initialized.

Write ONLY **ONE** ARM assembly instruction (at location `return`) to return from the function `fun1` to the `main` program using a LDMxx instruction with IA, IB, DA, or DB notation and to correctly update the stack pointer (do not forget to include all operands).

`main`

`.....`

`call BL fun1`

`.....`

`fun1 STR R1, [SP, #4] !`  
`STR LR, [SP, #4] !`

`.....`

`MUL R14, R1, R1`

ADD **R1**, R1, R14

.....

return

The Op-Code of the instruction is: ✓ LDMDA

The operands of the instruction are: ✗ SP!, {R14, R1}.

**Answer Key:** LDMDA , SP!, { R1,PC } | R13!, { R1,PC } | SP!, { R1,R15 } | R13!, { R1,R15 } | SP!, { PC,R1 } | R13!, { PC,R1 } | SP!, { R15,R1 } | R13!, { R15,R1 }