Study Questions (Chapter 03 – Part 4)

- 1. What are the main differences between LDR, and ADR? Provide numeric examples to demonstrate the differences.
- 2. What is the difference between LDR r4, P3 and ADR r4, P3?
- 3. What will be the generated code if you replaced LDR r4, P3 by ADR r4, P3?
- 4. What is the difference between ADR r4, P3 and LDR r4, = P3?
- 5. What is the difference between LDR r4, P3 and LDR r4, = P3?
- 6. What is the difference between LDR r4, =0x1234 and LDR r4, = P3?
- 7. In the following program, how the pseudo instructions are implemented?

AREA my First Example, CODE, READONLY

```
ENTRY
LDR r0, =0x12345678
LDR r1, =ppp
LDR r2, ppp
ADR r3, ppp
B p

DCD 0xFFFF
END
```

What will be the values of r0, r1, r2, and r3 after executing this program?

AREA my First Example, CODE, READONLY

8. The following program, how the pseudo instructions are implemented?

```
ENTRY

LDR r0, =0x12345678

LDR r1, =ppp

LDR r2, ppp

ADR r3, ppp

P

AREA my_First_Example, DATA, READONLY

PPP

DCD 0xFFFF

END
```

What will be the values of r0, r1, r2, and r3 after executing this program?

9. Consider the following program.

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qqq

Edit lines L1, L2, L3, L4, L5, L6, and L7, by adding any combinations of data definition directives, i.e., DCD, DCW, DCB, SPACE, and ALIGN.

Manually calculate the values of r1, r2, r3, r4, r5, r6, and r7.

Assemble and run the program to verify your answer.

```
ENTRY
      LDR r1, =L1
      LDR r2, =L2
      LDR r3, =L3
      LDR r4, =L4
      LDR r5, =L5
      LDR r6, =L6
      LDR r7, =L7
loop B loop
L1
     ..... • •
L2
     ..... • •
L3
     ..... . .
L4
     ..... • •
L5
     ..... • •
L6
     ..... · ·
L7
     ..... • •
      END
```

AREA data definitions, CODE, READONLY

10. Consider the following program.

Edit lines L1, L2, L3, L4, L5, L6, and L7, by adding any combinations of data definition directives, i.e., DCD, DCW, DCB, SPACE, and ALIGN.

Manually calculate the values of r1, r2, r3, r4, r5, r6, and r7.

Assemble and run the program to verify your answer.

```
AREA data definitions, CODE, READONLY
     ENTRY
     LDR r1, =L1
     LDR r2, =L2
     LDR r3, =L3
     LDR r4, =L4
     LDR r5, =L5
     LDR r6, =L6
     LDR r7, =L7
loop B loop
     AREA data definitions, DATA, READONLY
L1
     ..... ·
L2
     ..... • •
L3
     ..... • •
L4
L5
L6
     ..... • •
L7
     ..... ·
     END
```