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
p       B   p

ppp     DCD 0xFFFF
        END
```

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

8. 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
p       B   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.
   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

L1   ……..
L2   ……..
L3   ……..
L4   ……..
L5   ……..
L6   ……..
L7   ……..

     END
```

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
```