Chapter 6
Computational Problem Solving using Flow Control Instructions

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Flow Control Instructions

- Problem solving with branching structures

- Problem solving with looping structures

- Problem solving using both high-level structures.
  - Programming Exercise

Branching Structure related Exercise (1/2)

Exercises

1. Write assembly code for each of the following decision structures.

   a. IF AX < 0
         THEN
            PUT -1 IN BX
         END_IF

   b. IF AL < 0
         THEN
            put FFh in AH
         ELSE
            put 0 in AH
         END_IF

   c. Suppose DL contains the ASCII code of a character.

      (IF DL >= "A") AND (DL <= 'Z')
         THEN
            display DL
         END_IF

   d. IF AX < BX
         THEN
            IF BX < CX
               THEN
                  put 0 in AX
               ELSE
                  put 0 in BX
            END_IF
      END_IF

Branching Structure related Exercise (2/2)

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e.  IF  (AX  <  BX)  OR  (BX  <  CX)
        THEN
          put  0  in  DX
        ELSE
          put  1  in  DX
    END_IF

f.  IF  AX  <  BX
        THEN
          put  0  in  AX
        ELSE
          IF  BX  <  CX
            THEN
              put  0  in  BX
            ELSE
              put  0  in  CX
          END_IF
    END_IF
```

Looping Structure related Exercise

2. Use a CASE structure to code the following:

Read a character.

If it's "A", then execute carriage return.

If it's "B", then execute line feed.

If it's any other character, then return to DOS.

Write a sequence of instructions to do each of the following:

a. Put the sum $1 + 4 + 7 + \ldots + 148$ in AX.

b. Put the sum $100 + 95 + 90 + \ldots + 5$ in AX.

Employ LOOP instructions to do the following:

a. put the sum of the first 50 terms of the arithmetic sequence 1, 5, 9, 13, . . . in DX.

b. Read a character and display it 80 times on the next line.

c. Read a five-character password and overprint it by executing a carriage return and displaying five X's. You need not store the input characters anywhere.

Programming Exercise

Programming Exercises

8. Write a program to display a "?", read two capital letters, and display them on the next line in alphabetical order.

9. Write a program to display the extended ASCII characters (ASCII codes 80h to FFh). Display 10 characters per line, separated by blanks. Stop after the extended characters have been displayed once.

Thank You