Keegan Vaz
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SECMPNB

EXPERIMENT 5

AIM: To write an assembly program to sort numbers in ascending order

Prerequisite: TASM assembler

Theory:

Firstly we need to load all the contents that are needed to be arranged in ascending order to register CL.Then we need to travel from the memory location to compare the two numbers. If the first number is greater than the second number then there will be a swap. Then we need to fix the position for the last number and also decrease the count by 1. Again start checking and comparing till all the numbers are checked. After running the program we can see the ascending order in the dump.

ALGORITHM:

1. Load data from offset 500 to register CL (for count).
2. Travel from starting memory location to last and compare two numbers if the first number is greater than the second number then swap them.
3. First pass, fix the position for last number.
4. Decrease the count by 1.
5. Again travel from starting memory location to (last-1, by help of count) and compare two numbers if the first number is greater than the second number then swap them.
6. Second pass fixes the position for the last two numbers.
7. Repeat

CODE:

```
.MODEL  SMALL
  .DATA
       TABLE   DB      9,7,5,6,5,1
      VAL1    DB      5
       NL      DB     ' ','$'
  .CODE
  MAIN    PROC
     MOV AX,@DATA
       MOV DS,AX
       LEA BX,TABLE
          MOV DL,VAL1
  LBL1:
       LEA BX,TABLE
```

```
                MOV CL,5
LBL2:
        MOV AL,[BX]
       MOV DL,[BX+1]
      CMP AL,DL
      JB LBL3
      MOV [BX],DL
      MOV [BX+1],AL
LBL3:
        INC BX
          LOOP LBL2
        MOV DL,VAL1
          DEC DL
        MOV VAL1,DL
         CMP DL,00
         JNE LBL1
               MOV CL,6
        LEA BX,TABLE
DISPLA:
        LEA DX,NL
          MOV AH,09H
        INT 21H
        MOV DL,[BX]
         ADD DL,30H
         MOV AH,02H
        INT 21H
          INC BX
        LOOP DISPLA
                 MOV AH,4CH
        INT 21H
MAIN    ENDP
        END     MAIN
```

OUTPUT:

Conclusion:

From the above experiment we are able to arrange the given numbers in the program and set it in ascending order. Also to check the output we need to enter ‘td ascend.exe ’and run the program. From the view option, we need to select the dump so that the contents are seen in ascending order.

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AIM: To write an assembly program to sort numbers in descending order

Prerequisite: TASM assembler

Theory:

Firstly we need to load all the contents that are needed to be arranged in descending order to register CL.Then we need to travel from the memory location to compare the two numbers. If the first number is smaller than the second number then there will be a swap. Then we need to fix the position for the last number and also decrease the count by 1. Again start checking and comparing till all the numbers are checked. After running the program we can see the descending order in the dump.

ALGORITHM:

1. Load data from offset 500 to register CL (for count).
2. Travel from starting memory location to last and compare two numbers if the first number is smaller than the second number then swap them.
3. First pass, fix the position for last number.
4. Decrease the count by 1.
5. Again travel from starting memory location to (last-1, by help of count) and compare two numbers if the first number is smaller than the second number then swap them.
6. Second pass fix the position for the last two numbers.
7. Repeat.

CODE:

```
DATA SEGMENT
STRING1 DB 99H,12H,56H,45H,36H

DATA ENDS

CODE SEGMENT

ASSUME CS:CODE,DS:DATA

START: MOV AX,DATA

MOV DS,AX

MOV CH,04H

UP2: MOV CL,04H

LEA SI,STRING1
```

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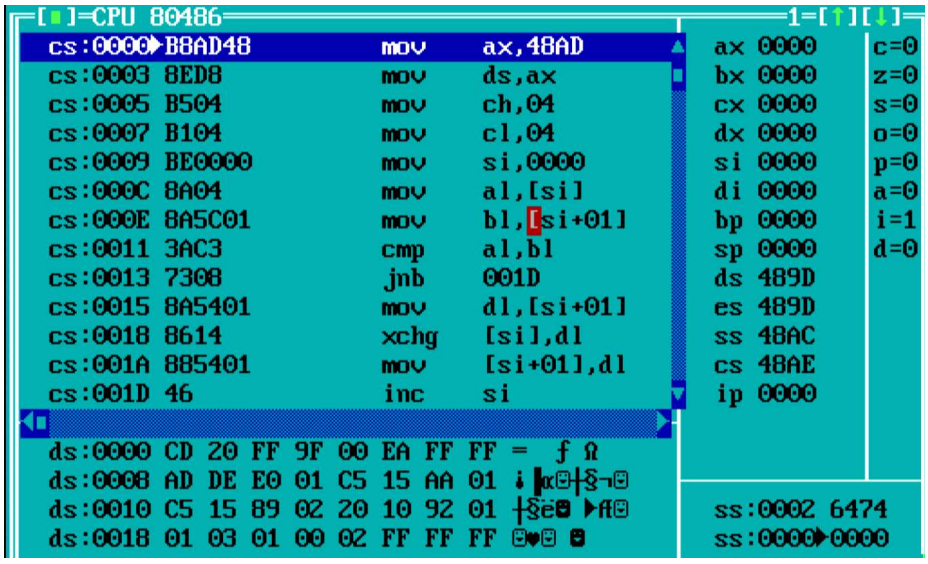
```
UP1:MOV AL,[SI]
MOV BL,[SI+1]
CMP AL,BL
JNC DOWN
MOV DL,[SI+1]
XCHG [SI],DL
MOV [SI+1],DL

DOWN: INC SI
DEC CL
JNZ UP1
DEC CH
JNZ UP2
INT 3
CODE ENDS
END START
```

OUTPUT:



Conclusion:

From the above experiment we are able to arrange the given numbers in the program and set it in descending order. Also to check the output we need to enter ‘td descend.exe ’and run the program. From the view option, we need to select dump so that the contents are seen in descending order.