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# Question 1:

# **Calculate the sum using loops:**

# **1+4+7...148**

# Answer:

|  |  |
| --- | --- |
| 1 | ORG 100H |
| 2 |  |
| 3 | .DATA |
| 4 |  |
| 5 | TERM    *DW*  0 |
| 6 | SUM     *DW*  0 |
| 7 |  |
| 8 | .CODE |
| 9 |  |
| 10 | MOV TERM, 1 |
| 11 | MOV SUM, 0 |
| 12 | MOV AX, 0 |
| 13 |  |
| 14 | L1: ADD AX, TERM |
| 15 | ADD TERM, 3 |
| 16 | CMP TERM, 149 |
| 17 | JL L1 |
| 18 |  |
| 19 | MOV SUM, AX |
| 20 |  |
| 21 | RET |

# Question 2:

# **Implement the following algo for division by repeated subtraction:**

# **Initialize quotient to 0**

# **WHILE dividend > divisor, DO**

# **Increment quotient**

# **subtract divisor from dividend**

# **END\_ WHILE**

# **Write a sequence of instructions to divide AX by BX, and put the quotient in CX.**

# Answer:

|  |  |
| --- | --- |
| 1 | ORG 100H |
| 2 |  |
| 3 | .DATA |
| 4 |  |
| 5 | QUOTIENT *DW* 0 |
| 6 | DIVISOR *DW* 5 |
| 7 | DIVIDEND *DW* 25 |
| 8 |  |
| 9 | .CODE |
| 10 |  |
| 11 | MOV AX, DIVIDEND |
| 12 |  |
| 13 | L1: INC QUOTIENT |
| 14 | SUB AX, DIVISOR |
| 15 | CMP AX, DIVISOR |
| 16 | JGE L1 |
| 17 |  |
| 18 | MOV CX, QUOTIENT |
| 19 |  |
| 20 | RET |

# Question 3:

# **Read a character from CX and if it's upper case alphabet then put AX=1 , if it’s a lower case alphabet then put AX=-1 else put AX=0.**

# Answer:

|  |  |
| --- | --- |
| 1 | ORG 100H |
| 2 |  |
| 3 | .DATA |
| 4 |  |
| 5 | .CODE |
| 6 |  |
| 7 | MOV CX, 'a' |
| 8 | MOV AX, 0 |
| 9 |  |
| 10 | CMP CX, 41h |
| 11 | JL NOT\_ALPHABET |
| 12 |  |
| 13 | CMP CX, 5Ah |
| 14 | JL UPPER |
| 15 |  |
| 16 | CMP CX, 61h |
| 17 | JL NOT\_ALPHABET |
| 18 |  |
| 19 | CMP CX, 7Ah |
| 20 | JL LOWER |
| 21 |  |
| 22 | CMP CX, 7Ah |
| 23 | JG NOT\_ALPHABET |
| 24 |  |
| 25 |  |
| 26 | NOT\_ALPHABET:   MOV AX, 0 |
| 27 | JMP EXIT |
| 28 |  |
| 29 | UPPER:          MOV AX, 1 |
| 30 | JMP EXIT |
| 31 |  |
| 32 | LOWER:          MOV AX, -1 |
| 33 |  |
| 34 | EXIT:           RET |