

Program

ASSUME CS:CODE, DS:DATA

DATA SEGMENT

MSG1 DB 0AH, "Enter 1st Number: \$"

MSG2 DB 0AH, "Enter 2nd Number: \$"

RESULT DB 0AH, 0DH, "The Product is: \$"

DATA ENDS

CODE SEGMENT

START: MOV AX, DATA
MOV DS, AX

LEA DX, MSG1

MOV AH, 09H

INT 21H

MOV BX, 0

START1: MOV AH, 01H; Read digit
INT 21H

CMP AL, 0DH

JZ NEXT1; Jump to NEXT1
if zero

MOV AH, 0

SUB AL, 30H

PUSH AX; Push to stack

MOV AX, 10D

MUL BX

POP BX; Pop from Stack

ADD BX, AX; 1st Number

JMP START1

NEXT1: PUSH BX; Push to stack

LEA DX, MSG2

MOV AH, 09H

INT 21H

MOV BX, 0

START2: MOV AH, 01H; Read digit
INT 21H

CMP AL, 0DH

JZ NEXT2; Jump to NEXT2
if zero

MOV AH, 0

SUB AL, 30H

PUSH AX; Push to stack

MOV AX, 10D

MUL BX

POP BX; Pop from Stack

ADD BX, AX; 2nd Number

JMP START2

NEXT2: POP AX; Pop from Stack

MUL BX

PUSH AX; Push to stack

LEA DX, RESULT

MOV AH, 09H

INT 21H

POP AX; Pop from Stack

MOV CX, 0

MOV DX, 0

MOV BX, 10D

BREAK: DIV BX

PUSH DX; Push to Stack

MOV DX, 0

INC CX

OR AX, AX

JNZ BREAK

PRINT: POP DX; Pop from Stack

ADD DL, 30H; Convert to ASCII

MOV AH, 02H; Display output

INT 21H

LOOP PRINT

MOV AH, 4CH; To terminate program
INT 21H

CODE ENDS

END START

Output

Enter 1st Number: 99

Enter 2nd Number: 99

The Product is: 9801

Aim

To perform the multiplication of two 8-bit numbers.

Logic

5 BX is initialized to 0. 1st digit of 1st number is read into AL. If ENTER key is pressed, it goes to the label NEXT1. Otherwise AH is initialized to 0 & 30H is subtracted from AL to get the non-ASCII value. AX is pushed to the stack. The value 10 in decimal is copied to AX & multiplied with BX. The value/result is now in DX:AX. The value previously pushed to the stack is popped into BX & added with AX. The same procedure is repeated to get the 2nd digit & from the 1st number in BX. The 1st number in BX is pushed to the stack. BX is initialized to 0 again & the 2nd number is obtained using the same steps as in the case of 1st number. BX will have the 2nd number. AX will have the 1st number popped from the stack. It is multiplied with BX & result is in DX:AX. AX is pushed to the stack & then the value is popped back into AX from the stack. CX & DX are initialized to 0 & 10 in decimal is moved into BX. ~~DX~~ is divided by BX & quotient is in AX & remainder is in DX. DX is pushed to the stack & then made 0. CX is incremented & AX is ORed with AX. This process is repeated until AX becomes 0. Each digit is popped from the stack into DX & added with 30H to make it ASCII & the output is displayed digit-by-digit.

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Result

Performed the multiplication of two 8-bit numbers.

Teacher's Signature: _____