; Define the data segment

Data Segment

a db 08h ; Input variable a

b db 04h ; Input variable b

res\_add db 00h ; Result of addition

res\_sub db 00h ; Result of subtraction

res\_mul dw ? ; Result of multiplication

res\_quo db 00h ; Result of division (quotient)

res\_rem db 00h ; Result of division (remainder)

res\_sqr dw ? ; Result of squaring a

res\_cube dw ? ; Result of cubing b

res\_fact dw ? ; Result of factorial b

;End of Data Segment

Data ends

; Define the code segment

Code Segment

Assume CS:Code, DS:Data

Start:

; Data Segment Initialization

mov dx,Data

mov ds,dx

; Perform addition of a and b

call add1

; Perform subtraction of b from a

call sub1

; Perform multiplication of a and b

call mul1

; Perform division of a by b

call div1

; Perform squaring of a

call sqr

; Perform cubing of b

call cube1

; Perform factorial of b

call FACTORIAL

; Exit the program

mov ah,4ch

int 21h

; Procedure to add a and b

add1 PROC NEAR

mov al,a ; Move the value of a to the AL register

mov bl,b ; Move the value of b to the BL register

; Add the values in AL and BL and store the result in AL

add al,bl

; Move the result of the addition to the res\_add variable

mov res\_add,al

; Return from the procedure

RET

endp

; Procedure to subtract b from a

sub1 PROC NEAR

mov al,a ; Move the value of a to the AL register

mov bl,b ; Move the value of b to the BL register

; Subtract the value of BL from AL and store the result in AL

sub al,bl

; Move the result of the subtraction to the res\_sub variable

mov res\_sub,al

; Return from the procedure

RET

endp

; Procedure to multiply a and b

mul1 PROC NEAR

mov al,a ; Move the value of a to the AL register

mov bl,b ; Move the value of b to the BL register

; Multiply the values in AL and BL and store the result in AX

mul bl

;Move the result of the multiplication to the res\_mul variable

mov res\_mul,ax

; Return from the procedure

RET

endp

; Procedure to divide a by b

div1 PROC NEAR

mov al,a ; Move the value of a to the AL register

mov bl,b ; Move the value of b to the BL register

; Divide the value of AL by BL and store the quotient in AL and remainder in AH

div bl

; Move the quotient to the res\_quo variable

mov res\_quo,al

; Move the remainder to the res\_rem variable

mov res\_rem,ah

; Return from the procedure

RET

endp

; Procedure to find square a

sqr PROC NEAR

mov al,a ; Move the value of a to AL

mov bl,a ; Move the value of a to BL

mul bl ; Multiply the values of AL and BL

mov res\_sqr,ax ; Move the result to the variable res\_sqr

RET ; Return from the procedure

endp

; Procedure to find cube b

cube1 PROC NEAR

mov al,b ; Move the value of b to AL

mov bl,b ; Move the value of b to BL

mul bl ; Multiply the values of AL and BL

mul bl ; Multiply the values of AL and BL

mov res\_cube,ax ; Move the result to the variable res\_cube

RET ; Return from the procedure

endp

; Procedure to calculate the factorial of a number

FACTORIAL PROC NEAR

mov al, 1 ; Initialize result to 1

mov bl, b ; Start with input value

FACT\_LOOP: ; Loop to perform multiplication

imul bl ; Multiply by current value of b

dec bl ; Decrement b

jnz FACT\_LOOP ; Continue until b reaches 0

mov res\_fact, ax ; Store result in res\_fact

RET

ENDP

; End of code segment

Code ends

end Start