

## Use of External Procedures

### :File Main1.asm

```
; This program adds 2 binary numbers and prints the result in binary format
TITLE " MAIN PROGRAM "
INCLUDE MACROS.INC
.MODEL MEDIUM
.STACK 200
.DATA
    PROMPT1      DB      'Enter the first 8-bit binary number  :','$'
    PROMPT2      DB      'Enter the second 8-bit binary number :','$'
    PROMPT3      DB      'The sum of the 2 numbers in binary is:','$'
    NUM1         DW      ?
    NUM2         DW      ?
.CODE
EXTRN READ:PROC, RESULT:PROC
MAIN PROC NEAR
    .STARTUP
    ; READ THE FIRST NUMBER
    DISPLAY PROMPT1
    CALL READ
    MOV NUM1,BX
    NEWLINE
    DISPLAY PROMPT2

    ; READ THE SECOND NUMBER
    CALL READ
    MOV NUM2,BX
    MOV BX, NUM1
    ADD BX, NUM2
    NEWLINE
    DISPLAY PROMPT3
    CALL RESULT
    .EXIT
    RET

MAIN ENDP
END
```

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### File Macros.inc:

```
;This file contains all macros
DISPLAY MACRO TXT
    LEA DX, TXT
    MOV AH, 09
    INT 21H
ENDM

NEWLINE MACRO
    MOV AH, 02
    MOV DL, 0AH
    INT 21H
    MOV DL, 0DH
    INT 21H
ENDM
```

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## File Root.asm

```
.MODEL SMALL
.CODE
;*****
; READ A NUMBER AND CONVERT IT TO BINARY
READ PROC NEAR PUBLIC
    MOV BX, 0000
    MOV CX, 0008
    MOV AH, 01H
L1:   INT 21H
    SUB AL, 30H
    SHL BL, 1
    OR BL, AL
    LOOP L1
    XOR BH, BH
    RET
READ ENDP

;*****
RESULT PROC NEAR PUBLIC
    MOV CX, 0008
    CLC
NEXT: ROL BL, 1
    JNC BIT_0
    MOV DL, '1'
    MOV AH, 02H
    INT 21H
    JMP LAST
BIT_0: MOV DL, '0'
    MOV AH, 02H
    INT 21H
LAST:  LOOP NEXT
    RET
RESULT ENDP
END
```

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### Steps to assemble and link the different routines with the main program:

>MASM MAIN1

this generates the file: MAIN1.OBJ

>MASM ROOT

this generates the file: ROOT.OBJ

>LINK MAIN1 + ROOT

this generates the file: MAIN1.EXE