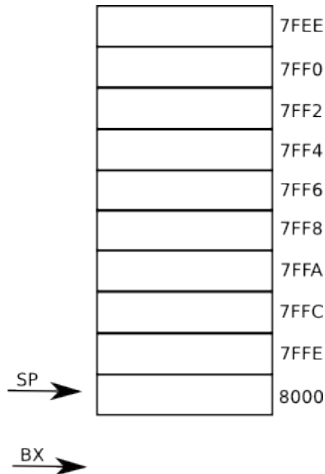


# Practica 1 - Subrutinas

5 de septiembre de 2011

# Subrutinas

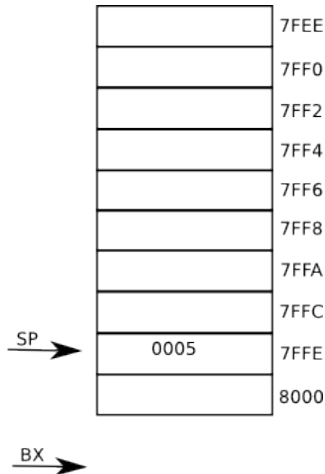
ORG	3000H	; Subrutina MUL	ORG	2000H	; Programa Principal
MUL:	PUSH	BX	MOV	AX, NUM1	
	MOV	BX, SP	PUSH	AX	
	PUSH	CX	MOV	AX, NUM2	
	PUSH	AX	PUSH	AX	
	PUSH	DX	MOV	AX, OFFSET RES	
	ADD	BX, 6	PUSH	AX	
	MOV	CX, [BX]	MOV	DX, 0	
	MOV	BX, [BX]	CALL	MUL	
	ADD	BX, 2	POP	AX	
	MOV	AX, [BX]	POP	AX	
SUMA:	ADD	DX, AX	POP	AX	
	DEC	CX	HLT		
	JNZ	SUMA	END		
	SUB	BX, 4			
	MOV	AX, [BX]			
	MOV	BX, AX			
	MOV	[BX], DX			
	POP	DX			
	POP	AX			
	POP	CX			
	POP	BX			
	RET				



# Subrutinas

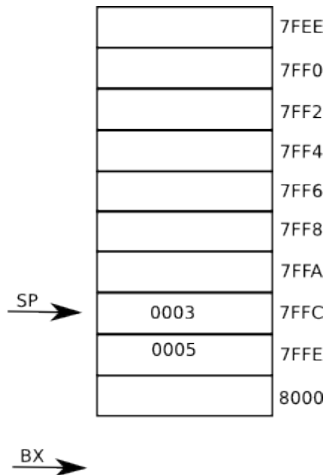
```
ORG    3000H    ; Subrutina MUL
MUL:    PUSH    BX
        MOV     BX, SP
        PUSH    CX
        PUSH    AX
        PUSH    DX
        ADD     BX, 6
        MOV     CX, [BX]
        MOV     BX, [BX]
        ADD     BX, 2
        MOV     AX, [BX]
SUMA:    ADD     DX, AX
        DEC     CX
        JNZ     SUMA
        SUB     BX, 4
        MOV     AX, [BX]
        MOV     BX, AX
        MOV     [BX], DX
        POP     DX
        POP     AX
        POP     CX
        POP     BX
        RET

ORG     2000H ; Programa Principal
MOV     AX, NUM1
PUSH    AX
MOV     AX, NUM2
PUSH    AX
MOV     AX, OFFSET RES
PUSH    AX
MOV     DX, 0
CALL    MUL
POP     AX
POP     AX
POP     AX
HLT
END
```



# Subrutinas

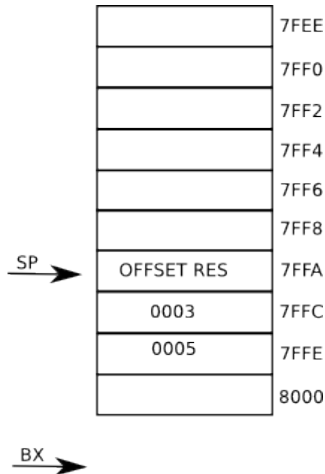
ORG	3000H	; Subrutina MUL	ORG	2000H	; Programa Principal
MUL:	PUSH	BX	MOV	AX, NUM1	
	MOV	BX, SP	PUSH	AX	
	PUSH	CX	MOV	AX, NUM2	
	PUSH	AX	PUSH	AX	
	PUSH	DX	MOV	AX, OFFSET RES	
	ADD	BX, 6	PUSH	AX	
	MOV	CX, [BX]	MOV	DX, 0	
	MOV	BX, [BX]	CALL	MUL	
	ADD	BX, 2	POP	AX	
	MOV	AX, [BX]	POP	AX	
SUMA:	ADD	DX, AX	POP	AX	
	DEC	CX	HLT		
	JNZ	SUMA	END		
	SUB	BX, 4			
	MOV	AX, [BX]			
	MOV	BX, AX			
	MOV	[BX], DX			
	POP	DX			
	POP	AX			
	POP	CX			
	POP	BX			
	RET				



# Subrutinas

```
ORG    3000H    ; Subrutina MUL
MUL:    PUSH    BX
        MOV     BX, SP
        PUSH    CX
        PUSH    AX
        PUSH    DX
        ADD     BX, 6
        MOV     CX, [BX]
        MOV     BX, [BX]
        ADD     BX, 2
        MOV     AX, [BX]
SUMA:    ADD     DX, AX
        DEC     CX
        JNZ     SUMA
        SUB     BX, 4
        MOV     AX, [BX]
        MOV     BX, AX
        MOV     [BX], DX
        POP     DX
        POP     AX
        POP     CX
        POP     BX
        RET

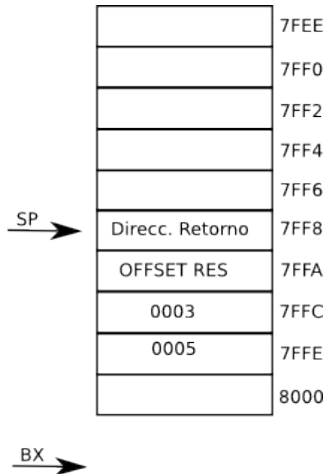
ORG     2000H ; Programa Principal
MOV     AX, NUM1
PUSH    AX
MOV     AX, NUM2
PUSH    AX
MOV     AX, OFFSET RES
PUSH    AX
MOV     DX, 0
CALL    MUL
POP     AX
POP     AX
POP     AX
HLT
END
```



# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET

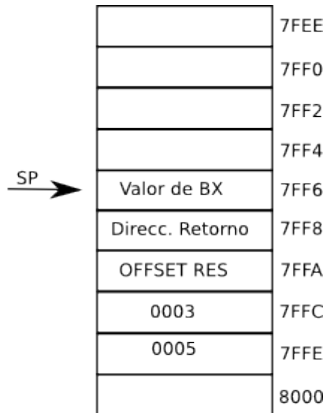
ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
POP AX
HLT
END
```



# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET

ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
POP AX
HLT
END
```



BX →

# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
          MOV       BX, SP
          PUSH      CX
          PUSH      AX
          PUSH      DX
          ADD       BX, 6
          MOV       CX, [BX]
          MOV       BX, [BX]
          ADD       BX, 2
          MOV       AX, [BX]
SUMA:    ADD       DX, AX
          DEC       CX
          JNZ       SUMA
          SUB       BX, 4
          MOV       AX, [BX]
          MOV       BX, AX
          MOV       [BX], DX
          POP       DX
          POP       AX
          POP       CX
          POP       BX
          RET
```

```
ORG      2000H ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL     MUL
POP      AX
POP      AX
POP      AX
HLT
END
```



	7FEE
	7FF0
	7FF2
	7FF4
Valor de BX	7FF6
Direcc. Retorno	7FF8
OFFSET RES	7FFA
0003	7FFC
0005	7FFE
	8000



# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH     CX
        PUSH     AX
        PUSH     DX
        ADD      BX, 6
        MOV      CX, [BX]
        MOV      BX, [BX]
        ADD      BX, 2
        MOV      AX, [BX]
SUMA:    ADD      DX, AX
        DEC      CX
        JNZ      SUMA
        SUB      BX, 4
        MOV      AX, [BX]
        MOV      BX, AX
        MOV      [BX], DX
        POP      DX
        POP      AX
        POP      CX
        POP      BX
        RET

ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL     MUL
POP      AX
POP      AX
POP      AX
HLT
END
```

BX →

SP →

	7FEE
	7FF0
	7FF2
Valor de CX	7FF4
Valor de BX	7FF6
Direcc. Retorno	7FF8
OFFSET RES	7FFA
0003	7FFC
0005	7FFE
	8000

# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
         MOV       BX, SP
         PUSH      CX
         PUSH      AX
         PUSH      DX
         ADD       BX, 6
         MOV       CX, [BX]
         MOV       BX, [BX]
         ADD       BX, 2
         MOV       AX, [BX]
SUMA:    ADD       DX, AX
         DEC       CX
         JNZ       SUMA
         SUB       BX, 4
         MOV       AX, [BX]
         MOV       BX, AX
         MOV       [BX], DX
         POP       DX
         POP       AX
         POP       CX
         POP       BX
         RET

ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL    MUL
POP      AX
POP      AX
POP      AX
HLT
END
```

BX →

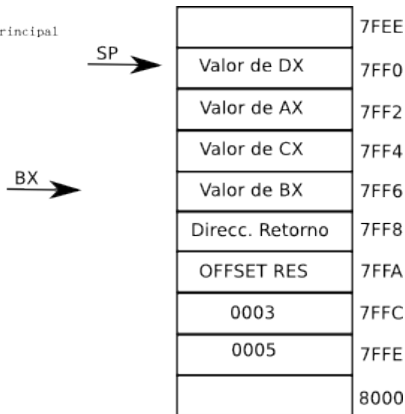
SP →

	7FEE
	7FF0
Valor de AX	7FF2
Valor de CX	7FF4
Valor de BX	7FF6
Direcc. Retorno	7FF8
OFFSET RES	7FFA
0003	7FFC
0005	7FFE
	8000

# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH      CX
        PUSH      AX
        PUSH      DX
        ADD       BX, 6
        MOV       CX, [BX]
        MOV       BX, [BX]
        ADD       BX, 2
        MOV       AX, [BX]
SUMA:    ADD       DX, AX
        DEC       CX
        JNZ       SUMA
        SUB       BX, 4
        MOV       AX, [BX]
        MOV       BX, AX
        MOV       [BX], DX
        POP       DX
        POP       AX
        POP       CX
        POP       BX
        RET
```

```
ORG      2000H ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL     MUL
POP      AX
POP      AX
POP      AX
HLT
END
```



# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET

ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
POP AX
HLT
END
```



	7FEE
Valor de DX	7FF0
Valor de AX	7FF2
Valor de CX	7FF4
Valor de BX	7FF6
Direcc. Retorno	7FF8
OFFSET RES	7FFA
0003	7FFC
0005	7FFE
	8000

# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH      CX
        PUSH      AX
        PUSH      DX
        ADD       BX, 6
        MOV       CX, [BX]
        MOV       BX, [BX]
        ADD       BX, 2
        MOV       AX, [BX]
SUMA:    ADD       DX, AX
        DEC       CX
        JNZ       SUMA
        SUB       BX, 4
        MOV       AX, [BX]
        MOV       BX, AX
        MOV       [BX], DX
        POP       DX
        POP       AX
        POP       CX
        POP       BX
        RET

ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH      AX
MOV      AX, NUM2
PUSH      AX
MOV      AX, OFFSET RES
PUSH      AX
MOV      DX, 0
CALL     MUL
POP       AX
POP       AX
POP       AX
HLT
END
```

SP →

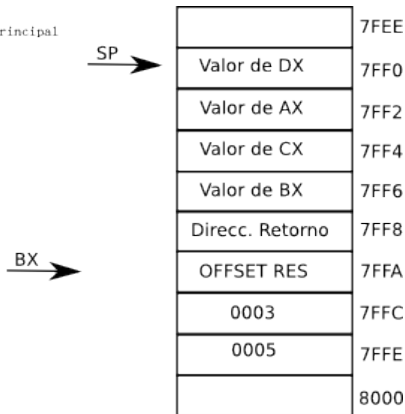
BX →

	7FEE
Valor de DX	7FF0
Valor de AX	7FF2
Valor de CX	7FF4
Valor de BX	7FF6
Direcc. Retorno	7FF8
OFFSET RES	7FFA
0003	7FFC
0005	7FFE
	8000

# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH      CX
        PUSH      AX
        PUSH      DX
        ADD       BX, 6
        MOV       CX, [BX]
        MOV       BX, [BX]
        ADD       BX, 2
        MOV       AX, [BX]
SUMA:    ADD       DX, AX
        DEC       CX
        JNZ       SUMA
        SUB       BX, 4
        MOV       AX, [BX]
        MOV       BX, AX
        MOV       [BX], DX
        POP       DX
        POP       AX
        POP       CX
        POP       BX
        RET

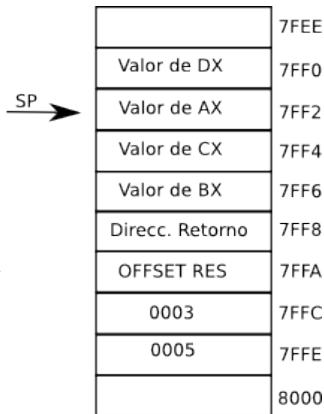
ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL    MUL
POP      AX
POP      AX
POP      AX
HLT
END
```



# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH      CX
        PUSH      AX
        PUSH      DX
        ADD       BX, 6
        MOV       CX, [BX]
        MOV       BX, [BX]
        ADD       BX, 2
        MOV       AX, [BX]
SUMA:    ADD       DX, AX
        DEC       CX
        JNZ       SUMA
        SUB       BX, 4
        MOV       AX, [BX]
        MOV       BX, AX
        MOV       [BX], DX
        POP       DX
        POP       AX
        POP       CX
        POP       BX
        RET

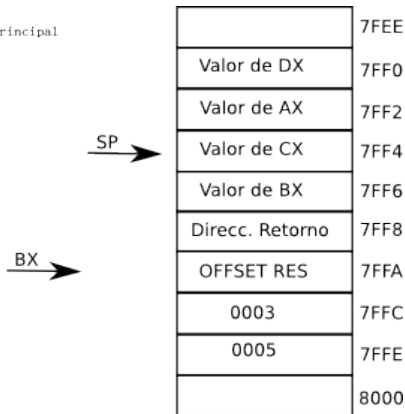
ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL     MUL
POP      AX
POP      AX
POP      AX
HLT
END
```



# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH      CX
        PUSH      AX
        PUSH      DX
        ADD       BX, 6
        MOV       CX, [BX]
        MOV       BX, [BX]
        ADD       BX, 2
        MOV       AX, [BX]
SUMA:    ADD       DX, AX
        DEC       CX
        JNZ       SUMA
        SUB       BX, 4
        MOV       AX, [BX]
        MOV       BX, AX
        MOV       [BX], DX
        POP       DX
        POP       AX
        POP       CX
        POP       BX
        RET

ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL     MUL
POP      AX
POP      AX
POP      AX
HLT
END
```

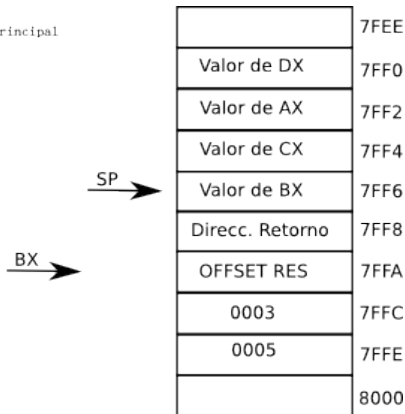




# Subrutinas

```
ORG      3000H      ; Subrutina MUL
MUL:     PUSH      BX
        MOV       BX, SP
        PUSH      CX
        PUSH      AX
        PUSH      DX
        ADD       BX, 6
        MOV       CX, [BX]
        MOV       BX, [BX]
        ADD       BX, 2
        MOV       AX, [BX]
SUMA:    ADD       DX, AX
        DEC       CX
        JNZ       SUMA
        SUB       BX, 4
        MOV       AX, [BX]
        MOV       BX, AX
        MOV       [BX], DX
        POP       DX
        POP       AX
        POP       CX
        POP       BX
        RET

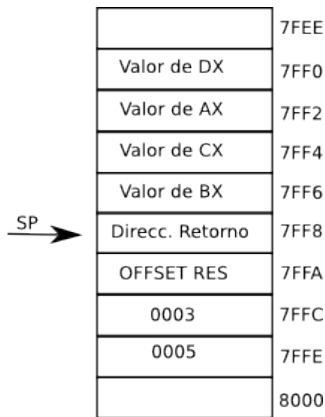
ORG      2000H      ; Programa Principal
MOV      AX, NUM1
PUSH     AX
MOV      AX, NUM2
PUSH     AX
MOV      AX, OFFSET RES
PUSH     AX
MOV      DX, 0
CALL     MUL
POP      AX
POP      AX
POP      AX
HLT
END
```



# Subrutinas

```
ORG    3000H    ; Subrutina MUL
MUL:    PUSH    BX
        MOV     BX, SP
        PUSH    CX
        PUSH    AX
        PUSH    DX
        ADD     BX, 6
        MOV     CX, [BX]
        MOV     BX, [BX]
        ADD     BX, 2
        MOV     AX, [BX]
SUMA:   ADD     DX, AX
        DEC     CX
        JNZ     SUMA
        SUB     BX, 4
        MOV     AX, [BX]
        MOV     BX, AX
        MOV     [BX], DX
        POP     DX
        POP     AX
        POP     CX
        POP     BX
        RET

ORG     2000H ; Programa Principal
MOV     AX, NUM1
PUSH    AX
MOV     AX, NUM2
PUSH    AX
MOV     AX, OFFSET RES
PUSH    AX
MOV     DX, 0
CALL    MUL
POP     AX
POP     AX
HLT
END
```

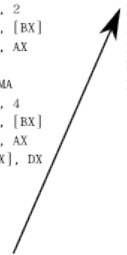


SP →

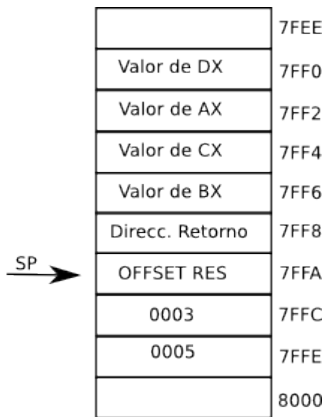
BX →

# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET
```



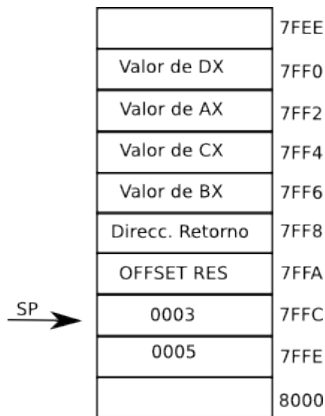
```
ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
POP AX
HLT
END
```



# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET

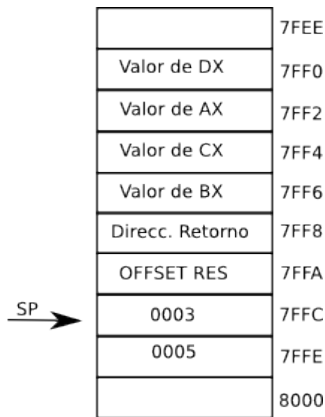
ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
HLT
END
```



# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET

ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
HLT
END
```



# Subrutinas

```
ORG 3000H ; Subrutina MUL
MUL: PUSH BX
      MOV BX, SP
      PUSH CX
      PUSH AX
      PUSH DX
      ADD BX, 6
      MOV CX, [BX]
      MOV BX, [BX]
      ADD BX, 2
      MOV AX, [BX]
SUMA: ADD DX, AX
      DEC CX
      JNZ SUMA
      SUB BX, 4
      MOV AX, [BX]
      MOV BX, AX
      MOV [BX], DX
      POP DX
      POP AX
      POP CX
      POP BX
      RET

ORG 2000H ; Programa Principal
MOV AX, NUM1
PUSH AX
MOV AX, NUM2
PUSH AX
MOV AX, OFFSET RES
PUSH AX
MOV DX, 0
CALL MUL
POP AX
POP AX
HLT
END
```

