Homework 4

TP01: Write an assembly language to calculate (a+b)^2 and store the answer in location 2005

```
LDA 2000
MOV B A
LDA 2001
ADD B
MOV B A
MVI A 00
MOV C B
LOOP: ADD B
JNC NO_CARRY
INR D
NO_CARRY: DCR C
JNZ LOOP
STA 2005
MOV A D
STA 2006

HLT
```

TP02: Write an assembly language to calculate whether m X 2n and store the answer in address 2000

```
LDA 2000
MOV B A
LDA 2001
MOV C A
MOV A B
ADD A
MOV B A
MVI A 00
```

```
MVI D 00
LOOP: ADD B
JNC NO_CARRY
INR D
NO_CARRY: DCR C
JNZ LOOP
STA 2005
MOV A D
STA 2006

HLT
```

TP03: Write an assembly language to calculate whether (a+b)^2 or (a-b)^2

```
LXI H 2000
MOV A M
INX H
MOV B M
INX H
MOV C M

MOV A C
CPI 01
JZ ADD
CPI 02
JZ SUB
JMP END

ADD: MOV A B
LXI H 2000
```

```
ADD M
JMP SQUARE

SUB: LXI H 2000
MOV A M
INX H
SUB M

SQUARE: MOV C A
MOV B A
MVI A 00
MOV D A

MULT: ADD C
JNC NO_CARRY
INR D
NO_CARRY: DCR B
JNZ MULT
STA 2005

END: HLT
```

TP04: Write an assembly language to calculate (a+b)^2-2b where (a+b)^2 > 2b

```
LXI H 2000
MOV B M
INX H
MOV C M
MOV A C
ADD A
```

```
MOV D A
MOV A B
ADD C
MOV B A
MVI E 00
MOV E A
MVI C 00

MULT: ADD B
JNC NO_CARRY
INR C
NO_CARRY: DCR E
JNZ MULT

CMP D
JNC STORE_A
MOV A D

STORE_A: SUB D
STA 2005
HLT
```

TP05: Write an assembly language to calculate (a-b)^2 + 3c

```
LXI H 2000
MOV B M
INX H
MOV C M
INX H
MOV D M
```

```
MOV A B
SUB C
MOV B A
MOV E A
MOV A D
ADD D
ADD D
MOV D A
MVI A 00
MVI C 00

MULT: ADD B
JNC NO_CARRY
INR C
NO_CARRY: DCR E
JNZ MULT

ADD D
STA 2005

HLT
```

TP06: Write an assembly language to calculate (a-b)^2 + 4c

```
LXI H 2000
MOV B M
INX H
MOV C M
INX H
MOV D M
```

```
MOV A B
SUB C
MOV B A
MOV E A
MOV A D
ADD D
ADD D
ADD D
MOV D A
MVI A 00
MVI C 00

MULT: ADD B
JNC NO_CARRY
INR C
NO_CARRY: DCR E
JNZ MULT

ADD D
STA 2005

HLT
```

TP07: Write an assembly language to calculate the division of two 8-bit numbers. (a>b)

```
LXI H 2000
MOV A M
INX H
MOV B M
MVI C 00
```

```
DIVIDE: CMP B
JC END
SUB B
INR C
JMP DIVIDE

END: MOV D A
MOV A C
STA 2005
MOV A D
STA 2009

HLT
```

TP08: Write an assembly language to find minimum value among 5 numbers

```
LXI H 2005
MOV C M
DCR C
LXI H 2000
MOV A M
INX H

LOOP: CMP M
JC SKIP
MOV A M
SKIP: INX H
DCR C
```

```
JNZ LOOP
STA 2010

HLT
```

TP09: Write an assembly language to find maximum value among 7 numbers

```
LXI H 2007
MOV C M
DCR C
LXI H 2000
MOV A M
INX H

LOOP: CMP M
JNC SKIP
MOV A M
SKIP: INX H
DCR C
JNZ LOOP
STA 2010

HLT
```

TP10: Write an assembly language to display fibonacci numbers

```
LXI H, 3000
MVI C, 08
MVI B, 00
MVI D, 01
MOV M, B
```

```
INX H

FIB: MOV M, A
MOV A, B
ADD D
MOV B, D
MOV D, A
INX H
MOV M, A
DCR C
JNZ FIB

HLT
```