**Experiment 1: 32-bit Addition**

MOV SI, 0400H

MOV DI, 0600H

MOV AX, [SI]

MOV BX, [SI+4]

ADD AX, BX

MOV [DI], AX

MOV AX, [SI+2]

MOV BX, [SI+6]

ADC AX, BX

MOV [DI+2], AX

INT 03

**Experiment 2: Largest and smallest**

MOV SI, 0400H

MOV CI, 07H

MOV AL, [SI]

UP: INC SI

MOV BL, [SI]

CMP AL, BL

JNC DOWN

MOV AL, BL

DOWN: DEC CL

JNZ UP

MOV [0500H], AL

INT 03

MOV SI, 0400H

MOV CI, 07H

MOV AL, [SI]

UP: INC SI

MOV BL, [SI]

CMP AL, BL

JC DOWN

MOV AL, BL

DOWN: DEC CL

JNZ UP

MOV [0500H], AL

INT 03

**Experiment 3: Ascending and Descending**

**Ascending:**

MOV CL, 05H

UP1: MOV CH, 05H

MOV SI, 0400H

MOV DI, 0401H

UP: MOV AL, [SI]

CMP AL, [DI]

JC DOWN

MOV BL, [DI]

MOV [DI], AL

MOV [SI], BL

DOWN: INC SI

INC DI

DEC CH

JNZ UP

DEC CL

JNZ UP1

HLT

**Decreasing:**

MOV CL, 05H

UP1: MOV CH, 05H

MOV SI, 0400H

MOV DI, 0401H

UP: MOV AL, [SI]

CMP AL, [DI]

JC DOWN

MOV BL, [DI]

MOV [DI], AL

MOV [SI], BL

DOWN: INC SI

INC DI

DEC CH

JNZ UP

DEC CL

JNZ UP1

HLT

**Experiment 4A: Comparison and Inversion of String**

MOV BX, 0FFFH

MOV CX, 0003H

MOV SI, 0500H

MOV DI, 0600H

CLD

REP

CMPSD

JZ DOWN

MOV BX, 0000H

JMP END

DOWN: MOV CL, 08H

MOV SI, 0502H

MOV DI, 0600H

UP: MOV AL, [SI]

MOV [DI], AL

DEC SI

INC DI

DEC CL

JNZ UP

END: INT 03

**Experiment 4B: Palindrome**

MOV BX, 0FFFH

MOV CL, 04H

MOV SI, 0500H

MOV DI, 0507H

UP: MOV AL, [SI]

MOV BL, [DI]

CMP AL, BL

JZ DOWN

MOV B, 0000H

JMP END

DOWN: INC SI

DEC DI

DEC CL

JNZ UP

END: INT 03

**Experiment 6: Fibonacci Series**

MOV SI, 0500H

MOV CL, 05H

MOV AL, 00H

MOV BL, 01H

L1: ADD AL, BL

MOV [SI], AL

MOV AL, BL

MOV BL, [SI]

INC SI

LOOP L1

HLT