

# Assignment 1

Name: Diptangshu Dey

Roll No: 20CS8018

**Q1. Program to check whether a number is even or odd.**

**Code:**

```
; ODD_EVEN

LXI H, 2051H
MOV A, M

ANI 01H

JZ EVEN

INX H
MVI M, 01H
HLT

EVEN: INX H
MVI M, 00H
HLT
```

**Input 1:**

Address (Hex)	Address	Data (Hex)	Data
2051	8273	05	5
2052	8274	01	1
2053	8275	00	0
2054	8276	00	0
2055	8277	00	0
2056	8278	00	0
2057	8279	00	0
2058	8280	00	0
2059	8281	00	0
205A	8282	00	0

## Input 2:

Address (Hex)	Address	Data (Hex)	Data
2051	8273	04	4
2052	8274	00	0
2053	8275	00	0
2054	8276	00	0
2055	8277	00	0
2056	8278	00	0
2057	8279	00	0
2058	8280	00	0
2059	8281	00	0
205A	8282	00	0

## Q2. Program to add two 16-bit integers.

### Code:

```
; Add two 16bit numbers with carry
LHLD 2050H
XCHG

LHLD 2052H
DAD D

SHLD 3050H

HLT
```

## Input:

Address (Hex)	Address	Data (Hex)	Data
2050	8272	42	66
2051	8273	2D	45
2052	8274	21	33
2053	8275	19	25
2054	8276	08	8
2055	8277	09	9
2056	8278	00	0
2057	8279	00	0
2058	8280	00	0
2059	8281	00	0
205A	8282	00	0
205B	8283	00	0
205C	8284	00	0
205D	8285	00	0
205E	8286	00	0
205F	8287	00	0

Output:

Address (Hex)	Address	Data (Hex)	Data
3050	12368	63	99
3051	12369	46	70
3052	12370	00	0
3053	12371	00	0
3054	12372	00	0
3055	12373	00	0
3056	12374	00	0
3057	12375	00	0
3058	12376	00	0
3059	12377	00	0
305A	12378	00	0
305B	12379	00	0
305C	12380	00	0
305D	12381	00	0
305E	12382	00	0
305F	12383	00	0

### Q3. Program to add a Series of Numbers.

#### Code:

```
; SUM OF SERIES
MVI A, 00H
LXI H, 2050H
MOV D, M

LXI H, 2051H

NEXT: ADD M
INX H
DCR D
JNZ NEXT

STA 2060H
HLT
```

#### Input:

Address (Hex)	Address	Data (Hex)	Data
2050	8272	05	5
2051	8273	06	6
2052	8274	02	2
2053	8275	04	4
2054	8276	01	1
2055	8277	09	9
2056	8278	00	0
2057	8279	00	0
2058	8280	00	0
2059	8281	00	0
205A	8282	00	0
205B	8283	00	0
205C	8284	00	0
205D	8285	00	0
205E	8286	00	0
205F	8287	00	0

#### Output:

Address (Hex)	Address	Data (Hex)	Data
2060	8288	16	22
2061	8289	00	0
2062	8290	00	0
2063	8291	00	0
2064	8292	00	0
2065	8293	00	0
2066	8294	00	0
2067	8295	00	0
2068	8296	00	0
2069	8297	00	0
206A	8298	00	0
206B	8299	00	0
206C	8300	00	0
206D	8301	00	0
206E	8302	00	0
206F	8303	00	0

#### Q4. Program to perform a sorting algorithm

Code:

```
; Bubble Sort
START: LXI H, 2050H
MVI D, 00H
MOV C, M

DCR C
INX H

CHECK: MOV A, M
INX H
CMP M

JC NEXTBYTE
JZ NEXTBYTE

MOV B, M
MOV M, A
DCX H
MOV M, B
INX H

MVI D, 01H

NEXTBYTE: DCR C
JNZ CHECK

MOV A, D
```

CPI 01H  
JZ START

HLT

### Input:

Address (Hex)	Address	Data (Hex)	Data
2050	8272	05	5
2051	8273	07	7
2052	8274	06	6
2053	8275	02	2
2054	8276	08	8
2055	8277	09	9
2056	8278	00	0
2057	8279	00	0
2058	8280	00	0
2059	8281	00	0
205A	8282	00	0
205B	8283	00	0
205C	8284	00	0
205D	8285	00	0
205E	8286	00	0
205F	8287	00	0

### Output:

Address (Hex)	Address	Data (Hex)	Data
2050	8272	05	5
2051	8273	02	2
2052	8274	06	6
2053	8275	07	7
2054	8276	08	8
2055	8277	09	9
2056	8278	00	0
2057	8279	00	0
2058	8280	00	0
2059	8281	00	0
205A	8282	00	0
205B	8283	00	0
205C	8284	00	0
205D	8285	00	0
205E	8286	00	0
205F	8287	00	0