



## EE2003 Computer Org. & Assembly Lang.

Section L, M, N

### Assignment 1 v1.0

Due date: 21/Feb/2023

#### Part-1: Finding mode of a list

Given a list of data, your task is to find out the most frequently occurring value, called 'mode' in statistics. If there are multiple modes in the data, your program can find any one of them.

You should implement the [algorithm given here](#) in assembly language.

Start with the following skeleton code. At the end of your program execution, the mode and maxCount variables should contain the correct values.

```
[org 0x0100]
jmp start

mode:      dw 0      ; mode should be found here once the program ends
maxCount:  dw 0      ; number of occurrences of mode value
data:      dw 60h, 55h, 45h, 50h, 40h, 55h, 35h, 25h, 30h, 55h, 45h, 10h
size:      dw 12     ; length of array

start:
    ; your code goes here
    ; -----
    ; -----

finish:
    mov ax, 0x4c00
    int 0x21
```

## Part-2: Finding union of two sets

Write a program to find a union of two sets of numbers. Assume that both sets can contain positive integers only, and a -1 is placed in the memory to indicate the end of a set. Also assume that the size of union set will be no more than 10.

The output set should follow the mathematical rules of sets, i.e. no duplicate elements, and order of elements does not matter.

Start with the following skeleton code.

```
[org 100h]
jmp start

; reserve space for 10 elements (plus one slot for -1)
; in the example, union would be 6, 9, 3, 8, 1, 2, 7, -1
union:      dw 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

set1:       dw 6, 9, 3, 8, 1, -1 ; Note, -1 is NOT a part of set
set2:       dw 2, 3, 9, 7, -1

start:
    ; your code goes here
    ; -----
    ; -----

finish:
    mov ax, 0x4c00
    int 21h
```

## Deliverables

Submit two files, mode.asm and union.asm.

[10 + 10 marks]

Write explanatory comments in your program so that the reader can easily understand your code. Do not state the obvious in comments, e.g. for an instruction `mov ax, 0`, a comment like “move zero to ax” is useless, but a comment like “set sum as zero” is helpful because it tells the intent of the programmer.