

## SECJ1023 Programming Technique II Semester 2, 2020/2021

### Lab Exercise 2: Class and Object Manipulations (2.5%)

#### Task:

Write a complete C++ program that contains two classes called **software** and **hardware**

- Write an appropriate **main** function
  - use **pointer** to create one of **software** objects
  - use **array** to create one of **hardware** objects
- Both classes should have the definition of the accessor, mutator, and the constructors of classes
  - give two examples (e.g., **software**: Dev-C++, RStudio; **hardware**: laptop, printer)
    - class **software**: use **string** to declare the data
    - class **hardware**: use **char** to declare the data
  - one **constructor with default arguments** (put outside class)
  - one **constructor with multiple arguments** (put inline)
  - one **copy constructor**
  - one **destructor**
  - a **non-return type** function for **get** data (put outside class and key in from keyboard)
  - a **friend** function for an overloaded output (<<) operator function to display **hardware** object
- Example of Output

```
Software
-----
Dev-C++
RStudio

Enter 2 software
adobe
microsoft

Software: Pointer of Object call
Enter 2 software
android
linux

Software: Copy constructor
python
matlab

Hardware
-----
laptop
mouse

Enter 2 hardware
desktop
printer

Hardware: Array of Object call
Enter 2 hardware
cable
scanner

Enter 2 hardware
bluetooth
pendrive

Hardware: Copy constructor
mouse pad
headset

Destructor call
desktop and printer are destroyed from hardware
bluetooth and pendrive are destroyed from hardware
cable and scanner are destroyed from hardware
mouse pad and headset are destroyed from hardware
android and linux are destroyed from software
python and matlab are destroyed from software
```

No.	Criteria	Mark
1	the program is able to run	1
2	all the required header files are included	1
3	the main function included proper input and output formatting used	2
4	class software attributes, functions, constructors, destructor	5
5	software (string for data)	1
6	class hardware attributes, functions, constructors, destructor	6
7	hardware (char for data)	1
8	friend function	1
9	class software object pointer	1
10	class software object pointer	1
11	Feedback on the tasks given during online class	5
Total		25

#### Submission:

Only **ONE CPP** file (**LE2\_Name.cpp**) to be submitted (<https://elearning.utm.my/20212/>)