**Infrastructure University**
Kuala Lumpur

# FINAL EXAMINATION
# MARCH SEMESTER 2015

## BACHELOR OF INFORMATION TECHNOLOGY (HONS) IN SOFTWARE ENGINEERING

## ADVANCED PROGRAMMING
## (BTT 112)

## (TIME : 3 HOURS)

MATRIC NO. :

IC. / PASSPORT NO. :

LECTURER : NASARUDIN BIN DAUD

### GENERAL INSTRUCTIONS

1. This question booklet consists of 4 printed pages including this page.
2. SECTION A: There are **THREE (3)** short answers questions in this section. **Answer ALL Questions** in the **ANSWER BOOKLET**.
3. SECTION B: There are **TWO (2) questions** in this section. Answer **ALL Questions** in the **ANSWER BOOKLET**.

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## SECTION A                                     (50 Marks)

**There are THREE (3) short answers questions in this section. Answer ALL Questions in the Answer Booklet.**

1.  Consider the following output:

    **Output to the file `myFile.txt`**
    ```
    One
    T
    8
    2.5
    true
    ```

    a)  Write a program to write data to a file with the above values

                                                              (12 Marks)

    b)  Write a statement to opens the file in such a way that data will only start written to its end.

                                                              (2 Marks)

    c)  Write a statement to opens file `myFile.txt` in both input and output modes.

                                                              (2 Marks)

2.  Consider the following:

    ```
    1    class Overloading
    2    {
    3    private:
    4          int x;
    5
    6    public:
    7          Overloading(int y=0)
    8          { x = y; }
    9
    10         int getX()
    11         { return x; }
    12
    13         Overloading operator * ( Overloading & );
    14         bool operator >= ( Overloading & );
    15         Overloading operator --();
    16    };
    ```

    a)  Write a function definition for line 13, line 14 and line 15.

                                                                     (20 Marks)

## 3. Complete the following:

```
2     class KLIUC {
3     private:
4         // a) declare double static member variable (to keep kliuc's
                budget)
5         double schoolBudget;
6
7     public:
8         KLIUC() { schoolBudget = 0; }
9
10        void addBudget(double add) {
11            schoolBudget += add;
12            // b) add static member variable declared earlier with a
                    local variable  }
13
14        double getSchoolBudget() { return schoolBudget; }
15
16        // c) write get function to return static member variable
17
18        // d) write static member function header that receive
                double argument and return no value
19    };
20
21    // e) initialized static member variable
22
23    // f) write static member function definition. This function adds
24            the kliuc's budgets to the school's budget.
```

a) Write the source code for (a) to (f)

(13 Marks)

b) What function that should display total all budgets?

(1 Mark)

There are TWO (2) questions in this section. Answer ALL Questions in the Answer Booklet.

1. Write a Square class that has the following members:
   - width : a double
   - length : a double
   - A virtual function print to display square's details
   - A function to calculate square's area.
   - Appropriate functions and constructors

   In the event that the value for width and length are less than 1.0, the function should throw an exception.

   Formula:
   - Square's Area = side x side

   *Note: No need to write the main () application.*

   (27 Marks)

2. Write a Cube class that inherit from the Square class and specifies additional variable named height. This class must include functions that calculate and return the volume and surface's area. Redefine the function print from the Square class.

   In the event that the value for height is less than 1.0, the function should throw an exception.

   ```
   Sample Output:
   width is:10
   Length is:15
   Cube height  :  12
   Cube Volume  :  1800
   Cube Surface Area  :  900
   ```

   Formula:
   - Cube's Surface Area = 6 x side x side = $6a^2$
   - Cube's Volume = side x side x side = $a^3$

   *Note: No need to write the main () application.*

   ( 23 Marks)

   **\*\*\* END OF QUESTIONS \*\*\***