International Software Engineering Program
International College
King Mongkut's Institute of Technology Ladkrabang

13006101 **Introduction to Computers and Programming**
Midterm Examination

Instruction

There are **5** questions, please **answer all** of them.

Questions:

1. (3 marks) What is the data type of each data below?

   1.1) `8.7e-4`

   1.2) `0xfa`

   1.3) `True`

2. (4 marks) What is the value returned by the Python interpreter after evaluating each of the following expression?

   2.1) `2 * (4 - 2) ** (2 + 3) * 5 - 3`

   2.2) **`10 // 3 * 3 == 10`**

3. (3 marks) Write a Python program to read a time in 24 hour format from the keyboard and the program prints out the time in the 12 hour format with AM or PM.

   An example of the program execution

```
Please enter a time in 24 hour format.
Hours: 14
Minutes: 45
Seconds: 6

The time you just entered in 12 hour format is 02:45:06 PM.
```

4. (4 marks) Write a Python program to work as a simple turtle-graphic interpreter. The program prints a console prompt "`turtle|>`" and keeps reading an input command from the user (one at a time) which can be the following until the program quits.

   - fd (forward), back (backward), lt (left), and rt (right),
     in this case the program will ask further its argument to be provided for this command, and then will perform the drawing task.

   - pu (penup), pd (pendown), reset (restart the turtle),
     in this case the command does not need any argument to supply with, and then will perform the task.

- quit to quit the program.

Here is an example of output of an execution of the program:

```
Hello, welcome to Turtle World!

turtle|>"fd"

Please input its argument:"100"

turtle|>"pu"

turtle|>"pendown"

Wrong command, please try again.

turtle|>"quit"
```

5. (6 marks) Please define two functions in order to draw nested squares (as shown below). One of the two function is **draw_square(n)** which is a function to draw a square of any size **n**, and this function will be called by the other function, named **draw_nested_squares(s,g)**, which draws a nested squares of size **s** and many inner squares, each of them has a gap of **g**; the inner squares that it will draw all have the size no less than 20.

The function call **draw_nested_squares(200,20)** will give the following result: