**NATIONAL UNIVERSITY OF SINGAPORE**

**SCHOOL OF COMPUTING**

Mock-Practical Examination 1 for Semester 1, AY2014/15

**CS1010J — Programming Methodology**

Sep 2014 Time Allowed: 1 hour

[Note: First 10 minutes is reserved for algorithm design; no coding in this period]

**Exercise 1: Income Tax [30 marks]**

In a certain country, the government collects income tax based on the rates shown in the table below.

|  |  |  |
| --- | --- | --- |
| **Income** | **Rate (%)** | **Gross Tax Payable ($)** |
| First $20,000  Next $10,000 | 0  3 | 0  300 |
| First $30,000  Next $50,000 | -  6 | 300  3000 |
| First $80,000  Above $80,000 | -  10 | 3300 |

For example, if you have earned $26000 in the last year, your income tax payable will be calculated as follows:

First $20,000 $0

Next $6,000 at 3% $180

Total tax payable $180

As another example, if your annual income is $78000, the income tax payable is:

First $30,000 $300

Next $48,000 at 6% $2880

Total tax payable $3180

Write a program **Tax.java** to read annual *income* of a person and print out the income *tax* he/she needs to pay. Your program should contain a method **computeTax()** that takes *income* and returns corresponding *tax*.

Both *income* and *tax* are of type **double**. You should correct your output of real number to two decimal places.

Two sample runs are shown below with user's input shown in **bold.**

Enter your annual income: **26000**

Your tax payable is: 180.00

Enter your annual income: **78000**

Your tax payable is: 3180.00

**Exercise 2: Next Saturday [60 marks]**

It is a boring Monday and Monday blues strikes again. You are looking forward to Saturday, so you decide to write a program to calculate the date of the coming Saturday.

Write a program **Saturday.java** to read *month* and *day* of a certain Monday in year 2014, print out the month and day of the Saturday in that week. For example, given that 2014-9-22 is a Monday, next Saturday will be 2014-9-27.

You may assume that resulting Saturday falls in year 2014.

Note that in year 2014, there are

**28 days in February;**

**30 days in April, June, September and November;**

**31 days in January, March, May, July, August, October and December**

Your program should contain a method **printDate()** that prints out the month and day of the Saturday in the required format.

Two sample runs are shown below with user's input shown in **bold.**

Enter the date of a Monday in 2014 <month day>: **2 17**

Saturday in that week is: February 22

Enter the date of a Monday in 2014 <month day>: **4 28**

Saturday in that week is: May 3

**=== END OF PAPER ===**