# A3 [30 marks]

*Focus:* arithmetic operators, Math class, printf () method

Q1. [6 marks] The evaluation of the cold of our environment relies on several elements such as relative humidity, speed of wind, and sunshine. To calculate the wind-chill temperature using wind and temperature, the formula below is used:

$$T_{wc} = 35.74 + 0.6215 \, t_a - 35.75 \, v^{0.16} + 0.4275 \, t_a \, v^{0.16}$$

Here, v is the wind speed measured in mph and $t_a$ is the exterior temperature measured in degrees Fahrenheit.

Develop a program that takes user input for wind speed of 2 or greater and temperature which is between -58 ºF and 41ºF and then calculates and prints the wind-chill temperature. Assume the user will always enter a valid value, i.e. within the correct range.
Hint: You can use Math.pow (base value, power value).

**Sample run:**

```
Enter the temperature in Fahrenheit between -58 F and 41 F: 33
Enter the wind speed miles per hour (must be greater than or equal to 2) : 5
The wind chill index is 28.250493144569216
```

Q2. [6 marks] Write a program that takes a real number as a user input and then prints the digits before and after the decimal point separately.

**Sample run:**

```
Enter a real number: 2.5
Integer part: 2
Fraction part: 0.5
```

Note: accuracy of the output is not important. i.e. 2.4 could result in 2 and 0.399999

Q3. [6 marks] Write a program which asks user to input an integer number between 0 and 999 (inclusive) and then prints the sum of all the digits of that integer number. For example, for an integer number 346, the sum should be 3 + 4 + 6 = 13.

Hint: You can use "%" and "/" operators to extracts digits of that integer. For example, 346 % 10 = 6 and 346 / 10 = 34.

**Sample run:**

```
Enter an integer between 0 and 999 (inclusive): 956
The sum of all digits in 956 is 20
```

Q4. [6 marks] Write a program that takes a number as an input from the user and then perform at least six operations on the given number using following operators:

- Arithmetic operators (use 2)

- Augmented assignment operator (use 2)

- Increment and decrement operators (use one prefix and one postfix)

Your program should show sample of using the selected operators and does not have to be a real world problem. Also, please ***add comments*** explaining how your operators works.

Q5. [6 marks] Write a program which generates and prints a random valid license plate number. In order to be valid the license plate should have three randomly generated letters from 'A' to 'Z' , followed by four randomly generated digits from 0 to 9.

**For example:**

A random vehicle plate number: TFW4387

## Submission Instructions

For this assignment, you need to do the following:

1- Create a Java project of which name consists of **your student number followed by the assignment number,** e.g., "1234567_A1".
2- Create one class for each question and write your answer inside that class. Your classes should have the same name as the question number (e.g., Q1)
3- After solving all questions, open Windows Explorer (or any other file explorer).
4- Navigate to your Java project folder (can be found inside your Eclipse workspace folder).
5- Locate the "src" folder for this project (the folder that includes the source code for all questions).
6- Zip the "src" folder and rename the zipped file to match your project name (e.g., 1234567_A1.zip).
7- Submit the zipped file **to Canvas.**

Note that you can resubmit an assignment, but the new submission overwrites the old submission and receives a new timestamp.