

Assignment 1 - Introduction to Programming with C++

Deadline: September 28 by 11:55pm
Type: Individual Assignment
Weight: 5%

Submission instructions:

- Create a cpp file for each question
- Compress the files using zip or other tools
- Submit the zip file on Moodle

Notes:

- Do not submit exe files
- All submissions must be done through Moodle

Marking Scheme:

- Program correctness (80%)
- Program clarity (output format, comments, completeness, readability) (20%)

Questions:

1. (25 marks) Write a program that prompts the user to input a one-digit integer and outputs the following shapes using the entered number. For example, if the user inputs 1 then the result will be:

```
1111111111
111111111
11111111
1111111
111111
11111
1111
111
11
1

1
11
111
1111
11111
111111
1111111
11111111
111111111
1111111111
```

2. (25 marks) Write a program that asks the user to enter an integer and prints its square, square root, the factorial as well as whether or not the number is a prime number. For example, if the user inputs 4, the output should look like this:

```
*****
```

```
Input a number:
```

```
4
```

```
*****
```

```
The results are:
```

```
Square:          16
```

```
Square root:     2
```

```
Factorial:       24
```

```
Prime:           No
```

```
*****
```

3. (25 marks) Write a program that takes the final grade of a student and returns the corresponding letter grade using the following marking scheme:

- A+ grade ≥ 90
- A 80 \leq grade < 90
- B 70 \leq grade < 80
- C 60 \leq grade < 70
- F grade < 60

4. (25 marks) Write a program that converts the temperatures from 1 to 100 Celsius into Fahrenheit. The output should look like something like this:

```
Celsius  Fahrenheit
```

```
1        33.8
```

```
2        35.6
```

```
3        37.4
```

```
4        38.2
```

```
This continues until 100
```