# Introduction to Computer Science and Programming 1

# CSCI120

### Chapter1-Assignment

**Note:** This document has been designed and developed as part of an initiative for creating an OER (Open Education Resource) package for the course CSCI 120 at Columbia College.

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# Requirements

* For each of the following problems,
  + Design an algorithm
  + Draw a flowchart to represent the algorithm
  + Test your flowchart using the tracing table (hand tracing approach) using one or two sample inputs.
* To provide the answer you can
  + Either use just a pen and paper and please scan your papers and insert it in the designated area on this paper.
  + Or, you can use www.draw.io online tool to create the flowchart and export the image and insert it here.

If it is a group assignment, please add the information here

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| --- | --- | --- |
| **# Of Students in the Group:** |  | |
|  |  |  |
| **Student 1** | *First name, last name* | *Student-ID* |
| **Student 2** | *First name, last name* | *Student-ID* |
| **Student 3** | *First name, last name* | *Student-ID* |
| **Student 4** | *First name, last name* | *Student-ID* |

**Problem1**

* Design a flowchart for an application which receive a number from the input and print a shape like this: (if the input is 5)

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# Problem2

* Design an algorithm and a flowchart which receives two numbers A and B and prints all the numbers that are bigger than A but smaller than B that are divisible by 3.

# Problem3

* Design an algorithm and a flowchart which receives two numbers A and B from the input and calculate A to the power of B and print the result. (Remember you cannot use ^, power, operation in your flowchart. You can use + (addition) and \* (multiplication) if needed)

# Problem4

* Design an algorithm and a flowchart which receives a number from input like 123 and returns the reversed of the number. For instance, if the input number is 123, the output should be 321.
* Note: the input number cannot be divisible by 10. In other word, the algorithm would not work for numbers like 1230 or 550 (basically any number that ends with a zero)

# Problem5

* Design an algorithm and a flowchart which receives a number from input and find the next prime number which is bigger than the input number. For instance if number 8 is given to the algorithm, it finds the first number that is bigger than 8 and is prime which is 11.