Exercise 2
Translating Flowchart to C++ Code II

Flowchart symbols to use:

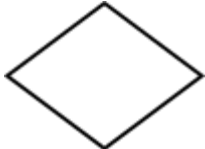| Shape	Name	Description
→	Flow Line	The arrow would direct the process, it must begin from one symbol and then terminate to another
(terminal shape)	Terminal	This would contain the start or end of the program.
(rectangle)	Process	Used to show that a process is performed. E.g. $z = x + y$
(diamond)	Decision	Commonly answerable by yes or no, true or false. The arrow that would indicate the direction must always be labeled if it is the true path or the false path.
(parallelogram)	Input / Output	This involves the data that is received by the user or the data that is produced by the program
(hexagon)	Preparation	This shows the operation that is required to declare and initialize a data prior to a process or condition.
(display shape)	Display	Indicates a process step where information is displayed to a person (e.g., PC user, machine operator).

Learning Outcomes:

- Construct a step-by-step procedure to accomplish the required process visualized through a flowchart
- Translate the flowchart into a C++ code

Problems:

Make flowcharts of the problem below and translate it into a C++ code

1. Collatz conjecture is described as:

$$n = \begin{cases} n/2 & \text{if } n \text{ is even} \\ 3n + 1 & \text{if } n \text{ is odd} \end{cases}$$

Your task is to determine which number from 10 to 1000 has the largest Collatz sequence sum (e.g. $5 - 5,16,8,4,2,1$; Sum: 36).

2. A curious number is defined by a having a sum of the factorials of each digit equal to itself. For example:

$145 = 1! \,(1) + 4! \,(24) + 5! \,(120) = 145.$

Write a program that would list all the curious number from 10^1 up to 10^6.