

## Introduction to Programming

# Week 01 Flowchart

Cảm ơn thầy Trần Duy Quang đã cung cấp template cho môn học



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# 1

## Content

Algorithm is the core of an application.

Flowchart is a common way to describe an algorithm. (Another way is pseudo-code)

6 fundamental symbols:

- "Start": a rounded rectangle
- "Input": a parallelogram
- "Process": a rectangle
- "Output": a parallelogram
- "End": a rounded rectangle
- And a line with arrow to connect all above elements.

In this lab, we practice to draw several basic flowchart.

# 2

## Basic flowchart understanding

Programming is the process to write a program / an application.

Specifically, programming includes 4 steps:

- Step 1: Understanding your problem.
- Step 2: Designing an algorithm.
- Step 3: Writing source code.
- Step 4: Packaging source code files into an executable file, a website, an apk, or an ipa file.

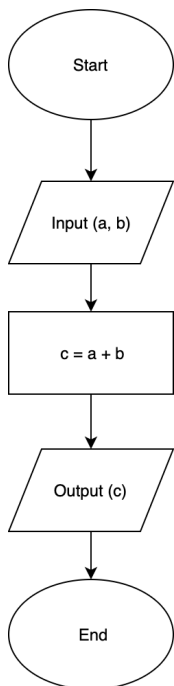
You may think step 3 is the most important step. But, actually, step 2 is the most one.

Without step 2, you don't know how to solve a problem manually. Then, you don't know to teach your computer how to solve it, by writing source code.

For example, do you know an algorithm to find the shortest path from 2 specific locations? If you don't, how can to implement a C++ / Python source code to find the shortest path?

There are 2 ways to express an algorithm: drawing a flowchart, or writing a pseudo-code.

Here is an example of a flowchart to solve a problem: compute the sum of 2 integers a, b.

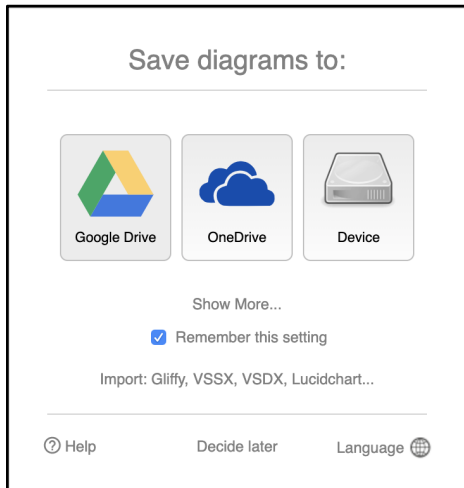


# 3 Basic flowchart creation in draw.io

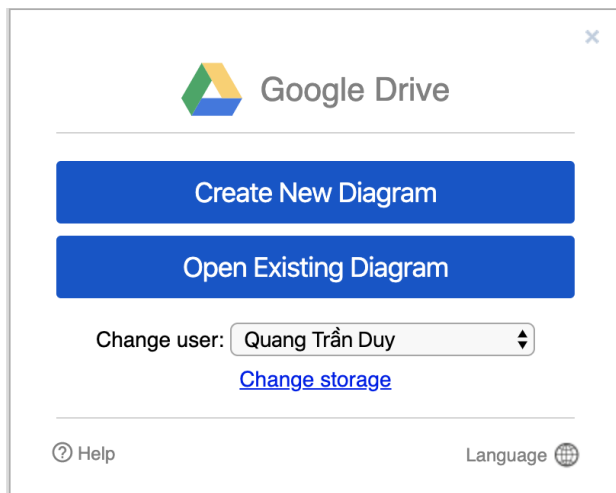
(Credit to Mr. Trần Duy Quang)

## Using draw.io to create flowchart

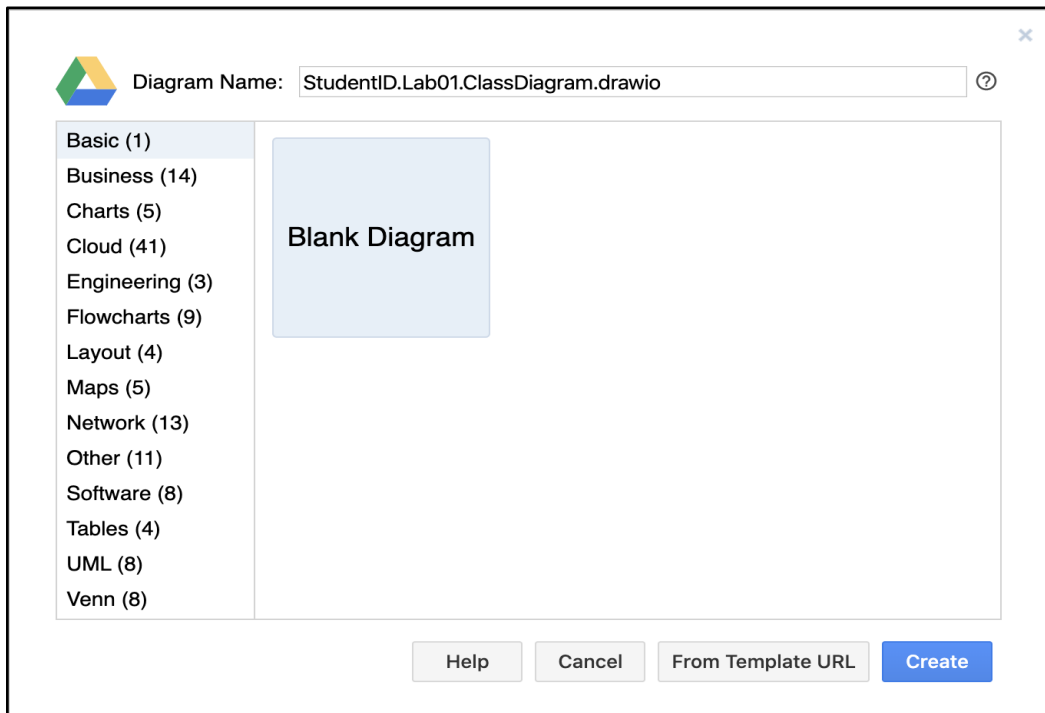
- **Step 01:** Access <http://draw.io>, choose to save your flowcharts using Google Drive (recommended).



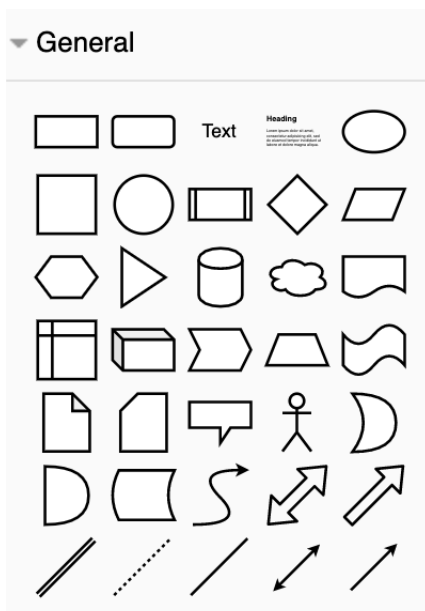
- **Step 02:** Choose **Create new diagram** to create a blank diagram.



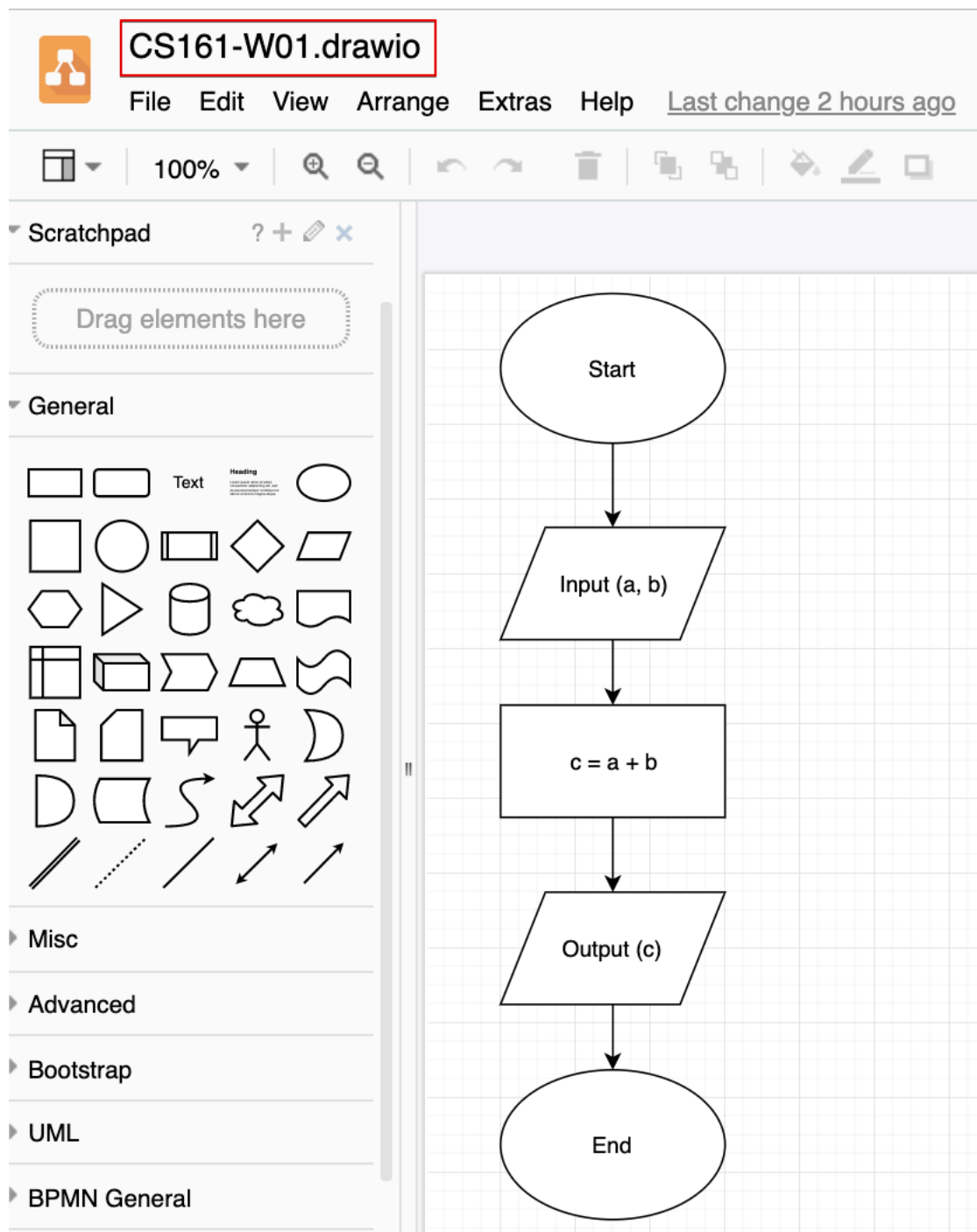
- **Step 03:** Create a Blank diagram, name it in the following format:



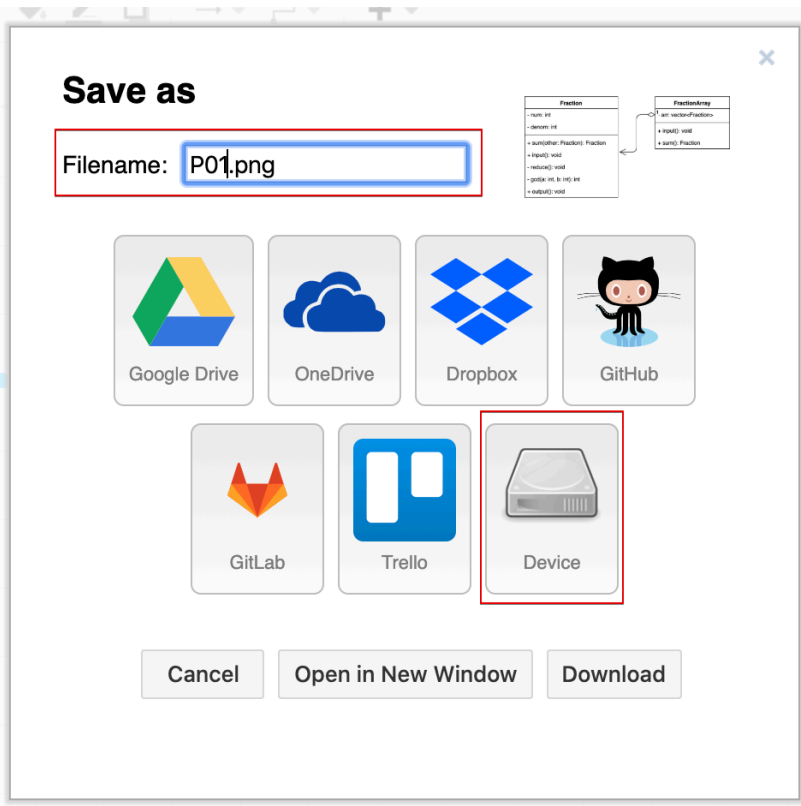
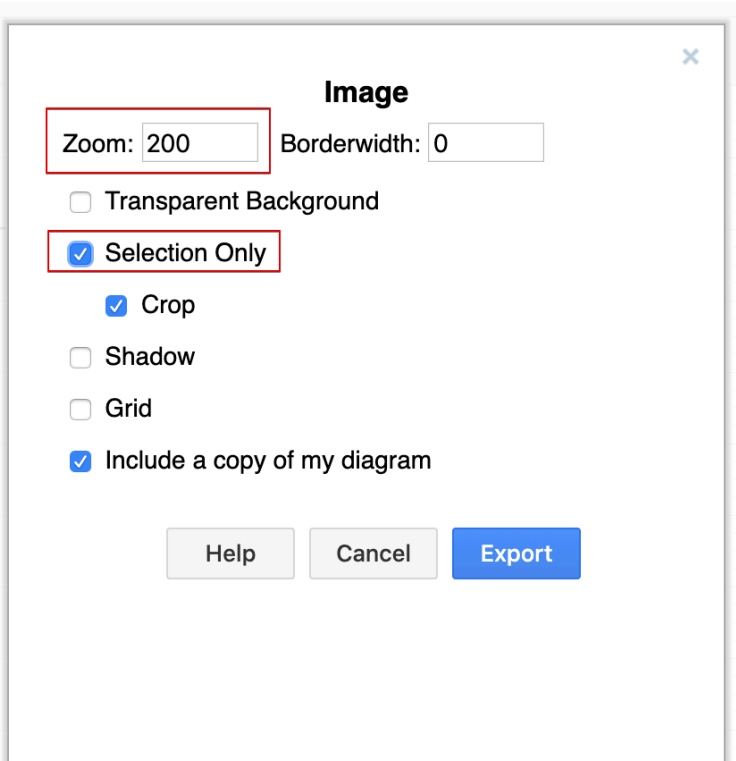
- **Step 04:** On the left panel, expand the Flowchart node for all the shapes needed for creating a flowchart



- **Step 05:** Create your first flow charts



- **Step 6:** To submit your work. Firstly, drag and select your diagram. Secondly, choose menu File – **Export as – PNG**. Thirdly, Zoom: 200%, Selection Only. Export. Finally, choose your local device and download.



# 4 Assignments

A: YY: 03 => P02, P05, P13.

H: YY: 45 => P02, P05, P06, P10, P13, P14, P15, P22, P23, P25. + 5 bài tự chọn