Lab 8 – Write your report

You should start to write your assignment report from now on. Your report should be about 2000-3000 words long (about 15-17 pages), More specifically,

- Write your registration number and the code of the course module clearly on the cover page of your assignment; include a table of contents for easy to navigate (1 page).
- Introduction: you should describe a variety of mobile robots in terms of platforms and mobility, as well as internal and external sensors you have learnt in this course, e.g. why they are required and how they differ (3 – 4 pages).
- Implementation of Task 1: To explain your PID control strategy for this task and present a flowchart to explain your PID control code. Run your PID control code to implement the required task in ROS. Create the robot trajectory, velocity and laser data graphs. Explain their shapes and potential improvement for the quality (2 – 3 pages).
- Implementation of Task 2: To explain your Fuzzy control strategy for this task and present a flowchart to explain your Fuzzy control code. Run your Fuzzy control code to implement the required task in ROS. Create the robot trajectory, velocity and laser data graphs. Explain their shapes and potential improvement for the quality (2 – 3 pages).
- Appendix: To list your C/C++ programs written for two tasks above, with some clear comments for easy reading and understanding. All words here are counted (5 – 6 pages).

Assessment criteria

This reassessment is to be assessed based on the criteria:

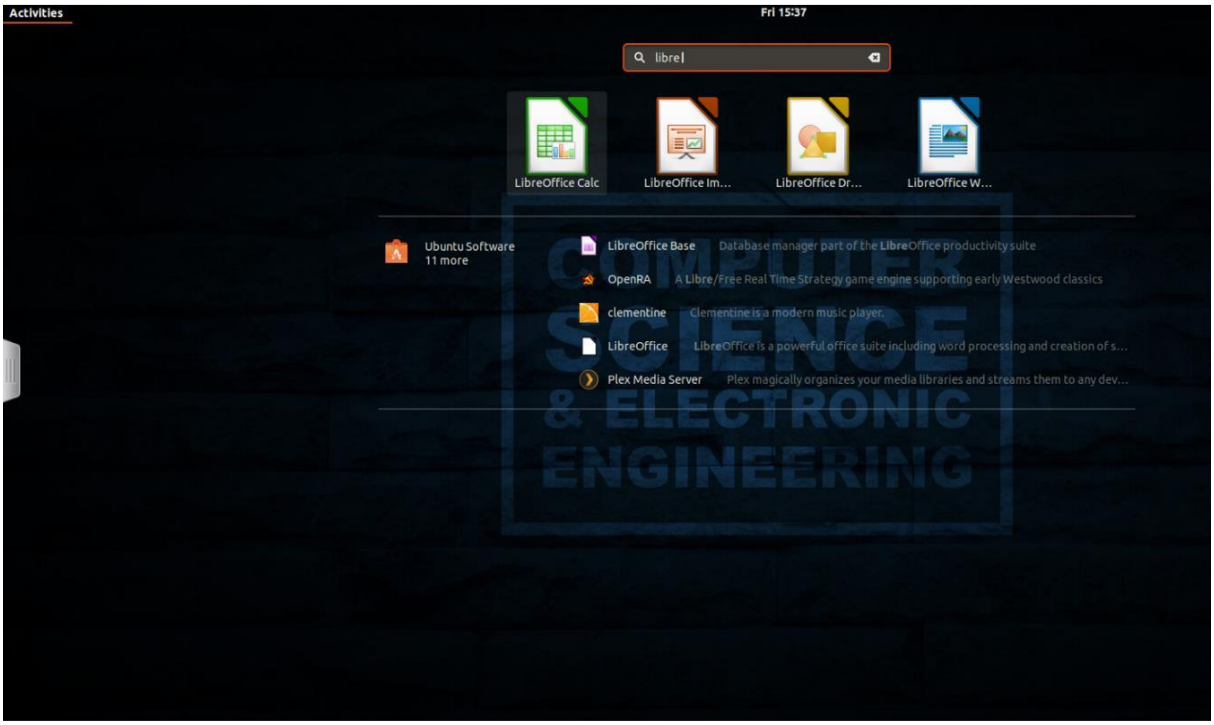
- A list of mobile robots in real-world applications you have learnt in this course (25%).
- The understanding of the task & the quality of your code (compactness, modularity) (25%).
  - The performance of your demonstration (trajectory smoothness & the graph quality) (25%).
- The writing quality of your report, including the structure & presentation style (25%).

Submission:

Please submit your assignment report in the PDF or WORD format to Mr Jiachen Zhang, 1786290704@qq.com before 14:00 on 26 July 2024.

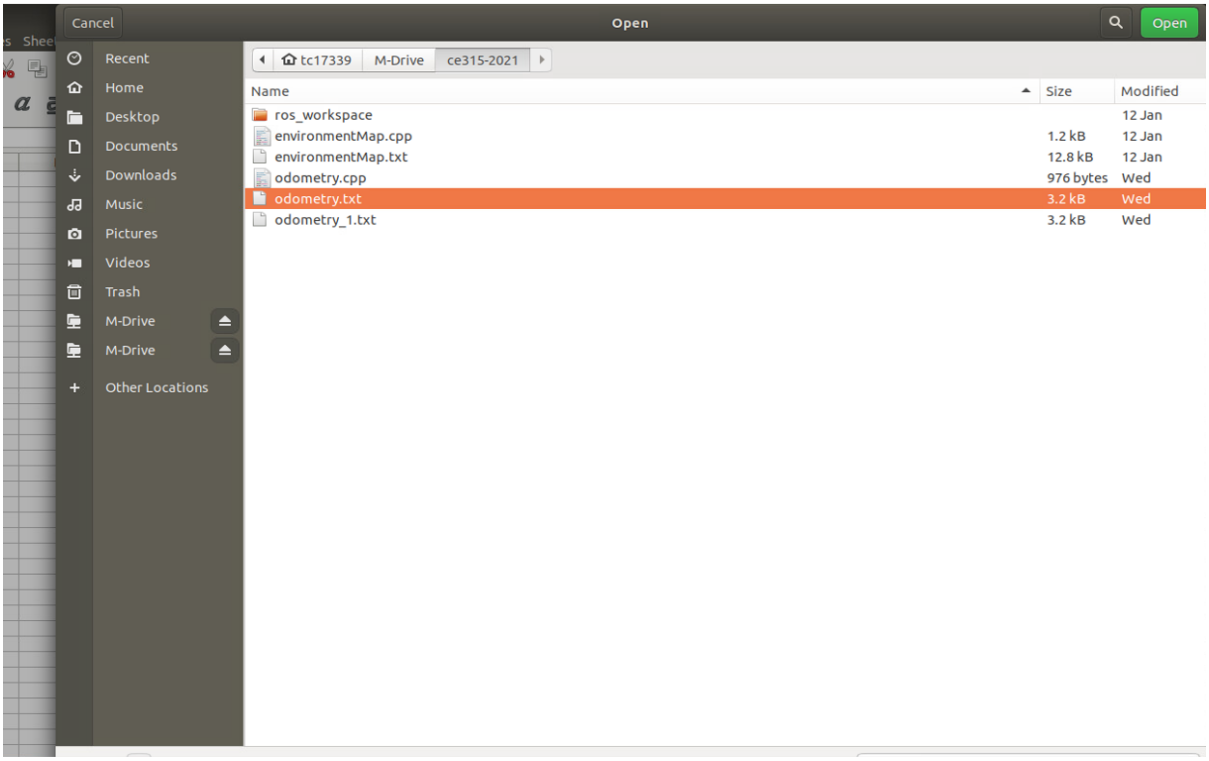
Plot your results using LibreOffice Calc in Ubuntu applications Step 1

Search and select LibreOffice Cals from Activities in Ubuntu desktop.



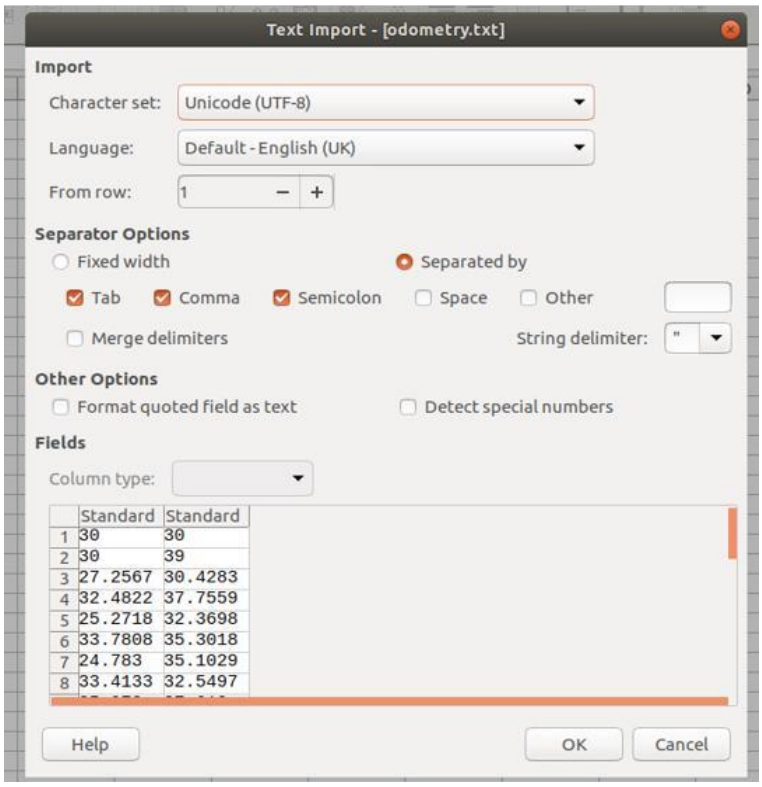
Step 2

Once you open the LibreOffice Cals, you should open your data file (e.g. odometry.txt in this case) from **File → Open.** In the pop-up window, go to the your file location (e.g. ~/MDrive/ce315-2021/odometry.txt in this case). You can select the file and then select **Open.**



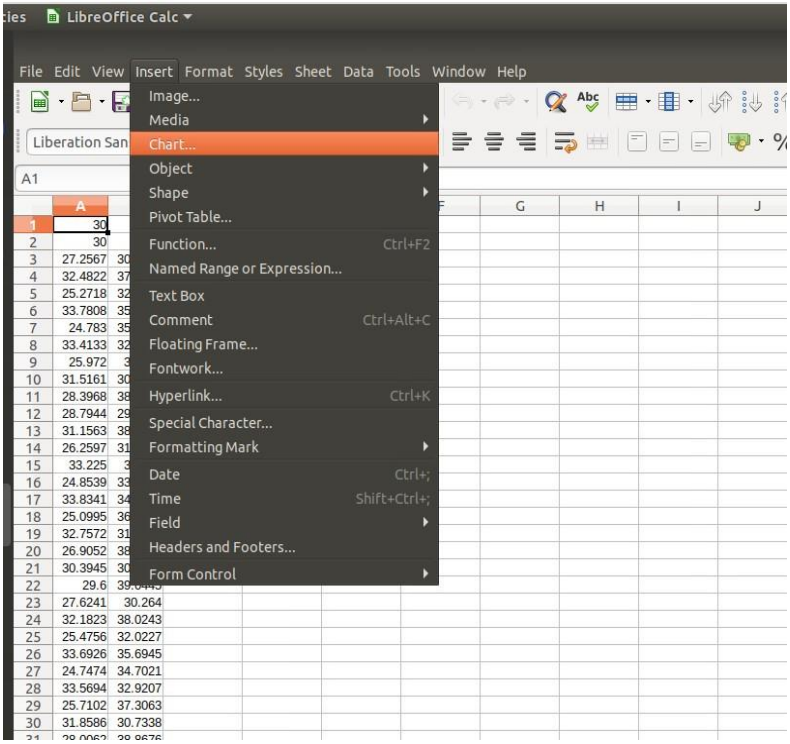
Step 3

In the pop-up window, you may select one of Separators for your data (Tab, Comma, Semicolon) based on the seperator used in your data. Then select Ok as the figure shown below.



Step 4

Now you can go to Insert→Chart→Chart Type→XY (Scatter), choose left diagram(Points Only) and select Finish. Then, you can view the shape of your data.



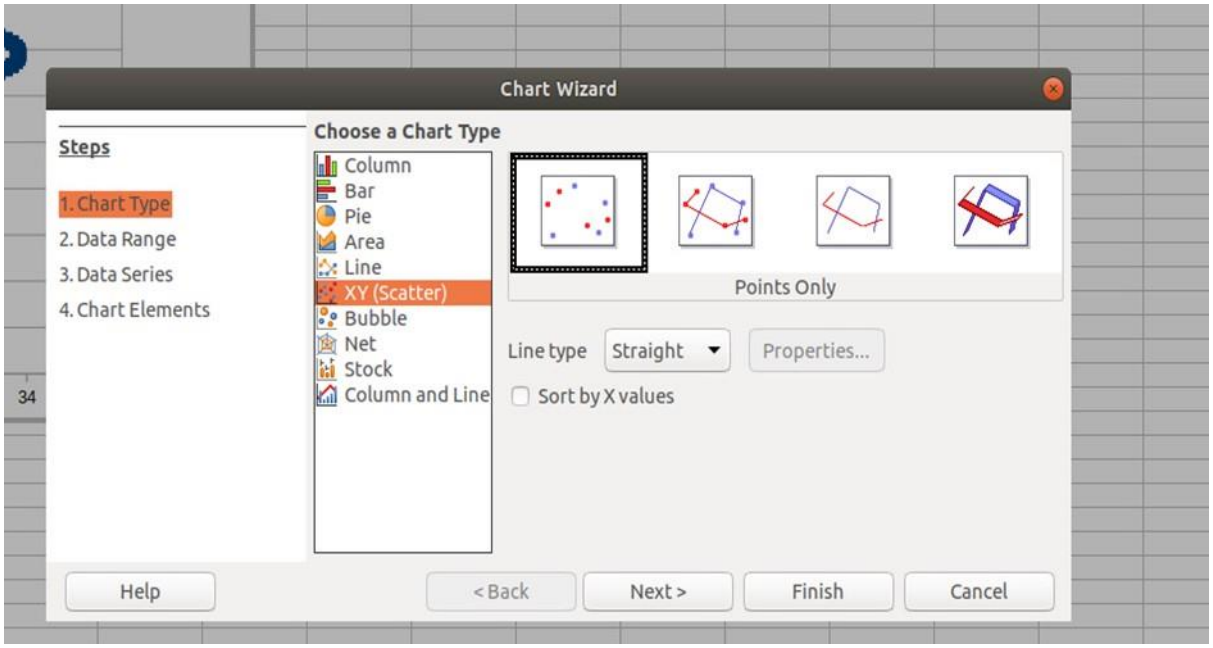
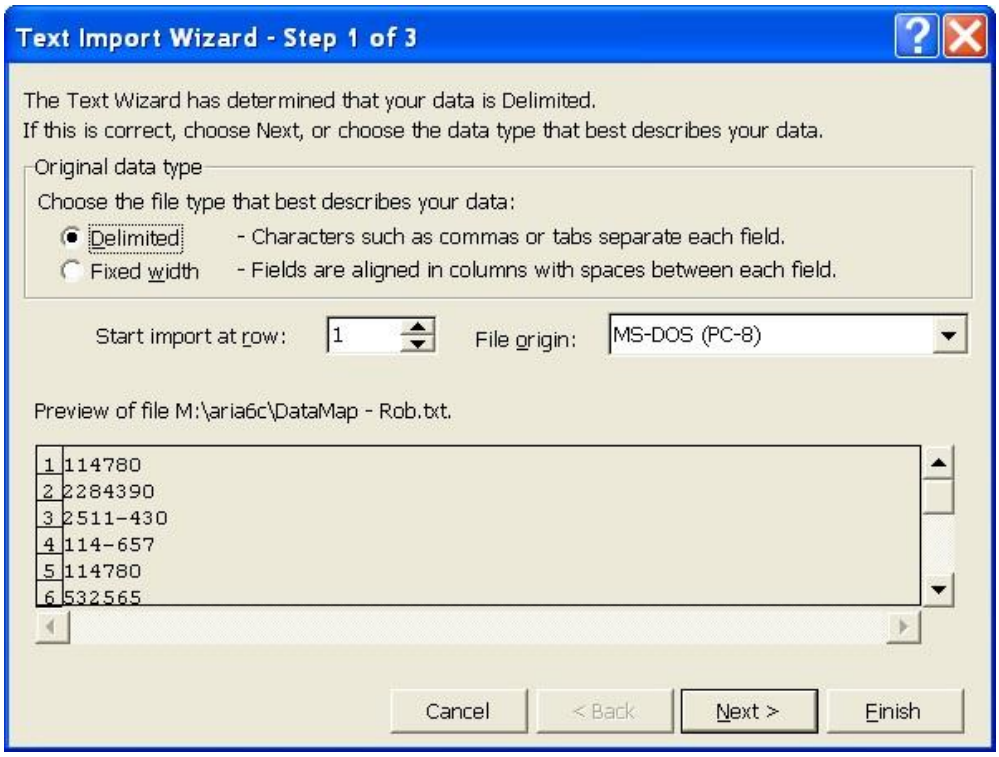


Chart Wizard
Steps
1. Chart Type
2. Data Range
3. Data Series
4. Chart Elements
Choose a Chart Type
Column
Bar
Pie
Area
Line
XY (Scatter)
Bubble
Net
Stock
Column and Line
Points Only
Line type
Straight
Properties...
Sort by X values
Help
< Back
Next >
Finish
Cancel
34

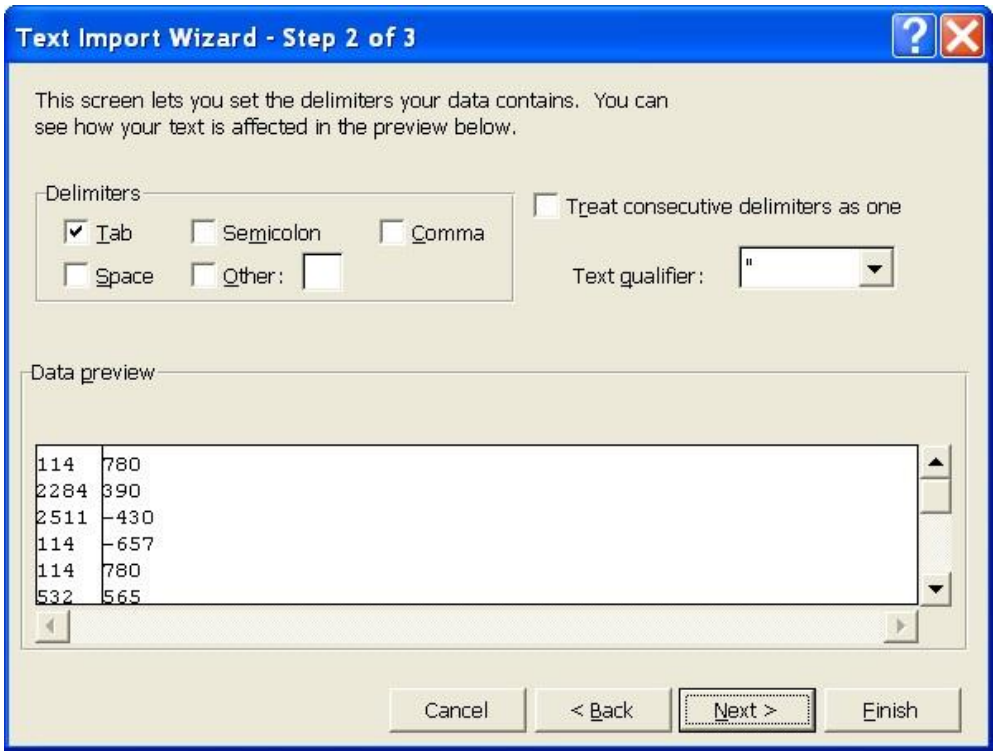
Plot your results in Excel

Step 1: From Excel use the command *open* in the menu *file*. Use the option *type of file* and select *all the files*. Open your data file.

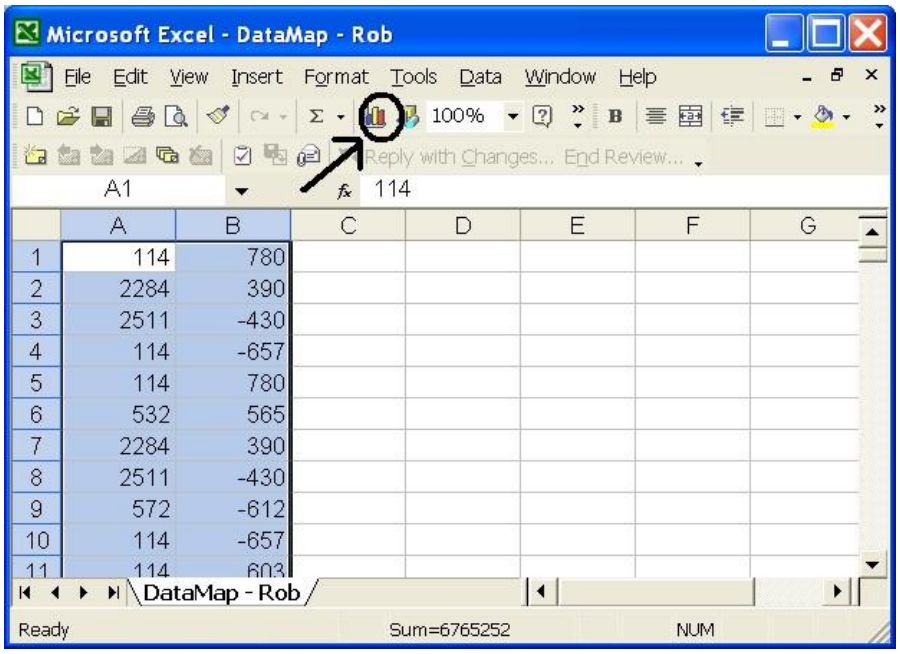
Step 2: The dialog window for *text import* will appear, from there selects the option *Delimited* in *original data type*, and press *next*.



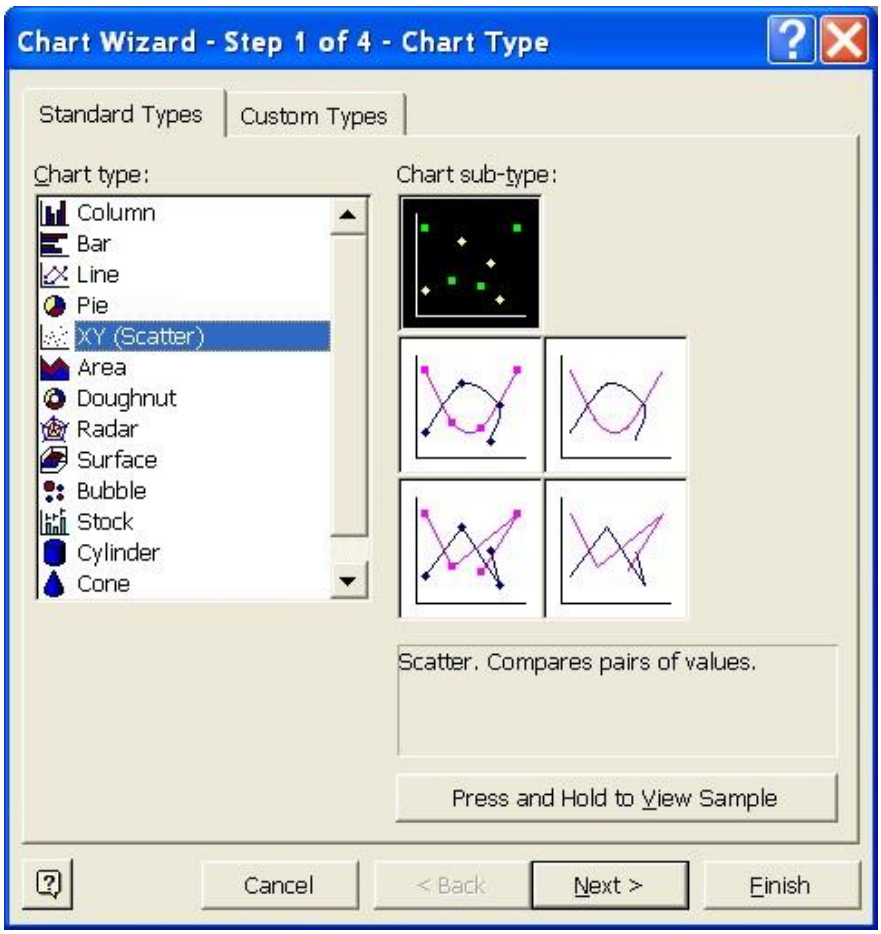
Step 3: In the second step of the *text import wizard* selects *Tab* in *Delimiters*, and press *finish*.



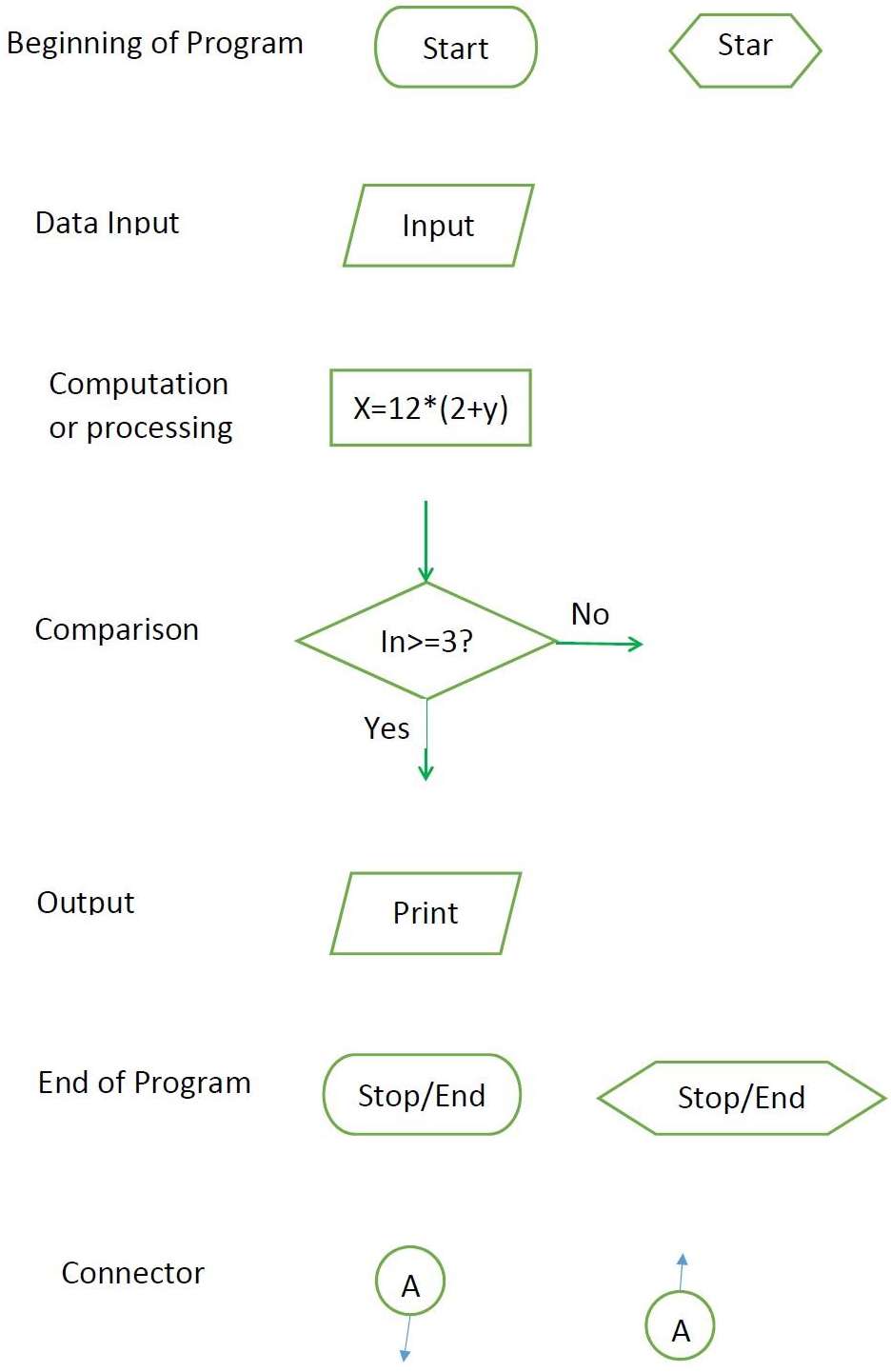
Step 4: From the worksheet, select all the range of cells that contain your data. And then press the Button *Chart Wizard*. Form the toolbar.



Step 5: In the *chart wizard* dialog select *XY(Scatter)* from *chart type*, and *subtype Compare pairs of Values*, press *next*, until the step number 3.



How to draw a flowchart:



Here is an example of the cover page for your reference.

Xi'an Jiaotong University

Summer course: AI and Intelligent Robots

Your name

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