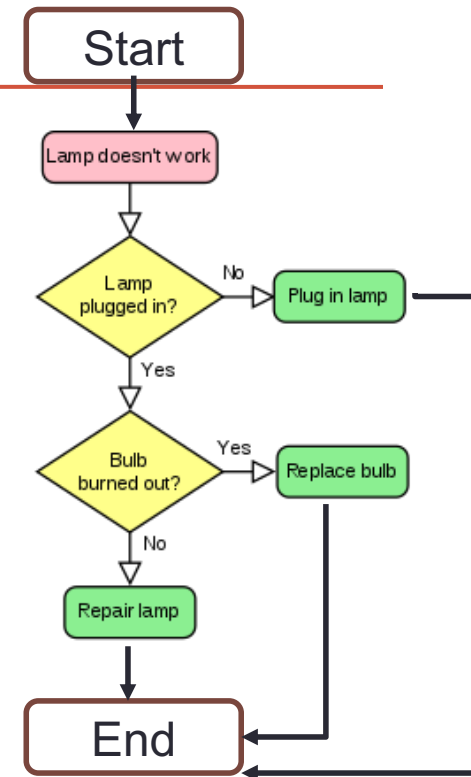


CISC 1003 - EXPLORING ROBOTICS



FLOWCHARTS



Flowcharting

- The four common symbols used in flowcharting are:
 - Start and Stop
 - Input and output
 - Decisions
 - Process

Flowcharting

- Start and stop:

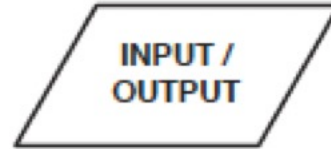


START / STOP

- The start symbol represents the beginning of the flowchart
 - with the label “start” appearing inside the symbol.
- The stop symbol represents the end of the flowchart
 - with the label “stop” appearing inside the symbol.
- These are the only symbols with keyword labels.

Flowcharting

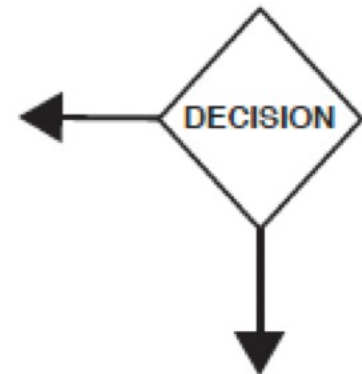
- Input and output:



- The input and output symbol contains data that is used for input (e.g., provided by the user)
 - and data that is the result of processing (output)

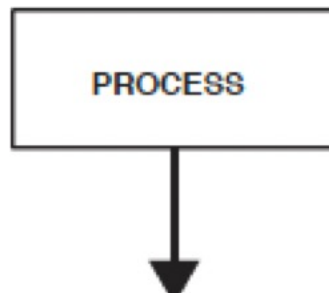
- Decisions:

- The decision symbol contains a question or a decision that has to be made.

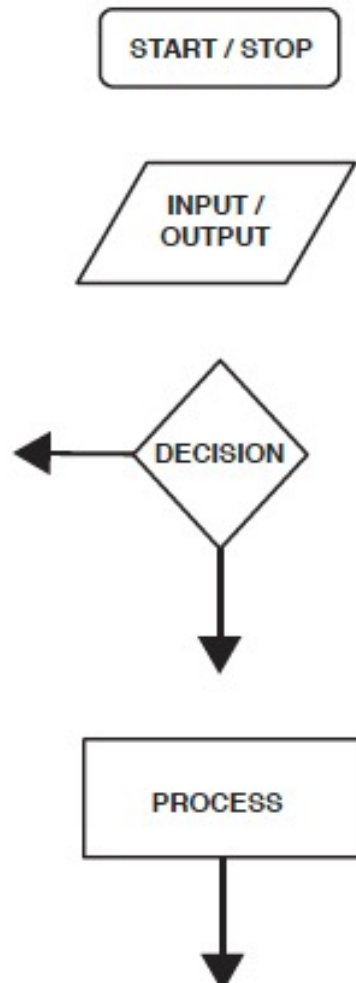


Flowcharting

- Process:
 - The process symbol contains brief descriptions (a few words) of a rule or some action taking place .



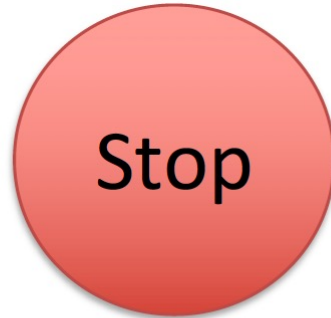
Common Flowchart Symbols



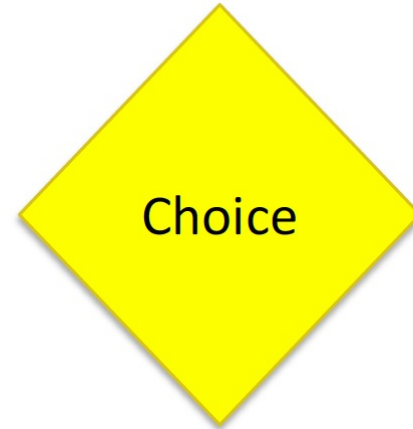
Flowcharts

- Many times, colors are also used to distinguish between different components

Flowcharts have a standard set of shapes and colors that are universally used so that everyone can understand what they mean.



The start and the stop shapes show where the program starts and stops

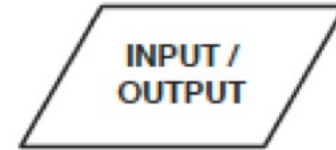


Yellow diamonds represent a choice or decision based on a question. This must be at least a yes/no decision.



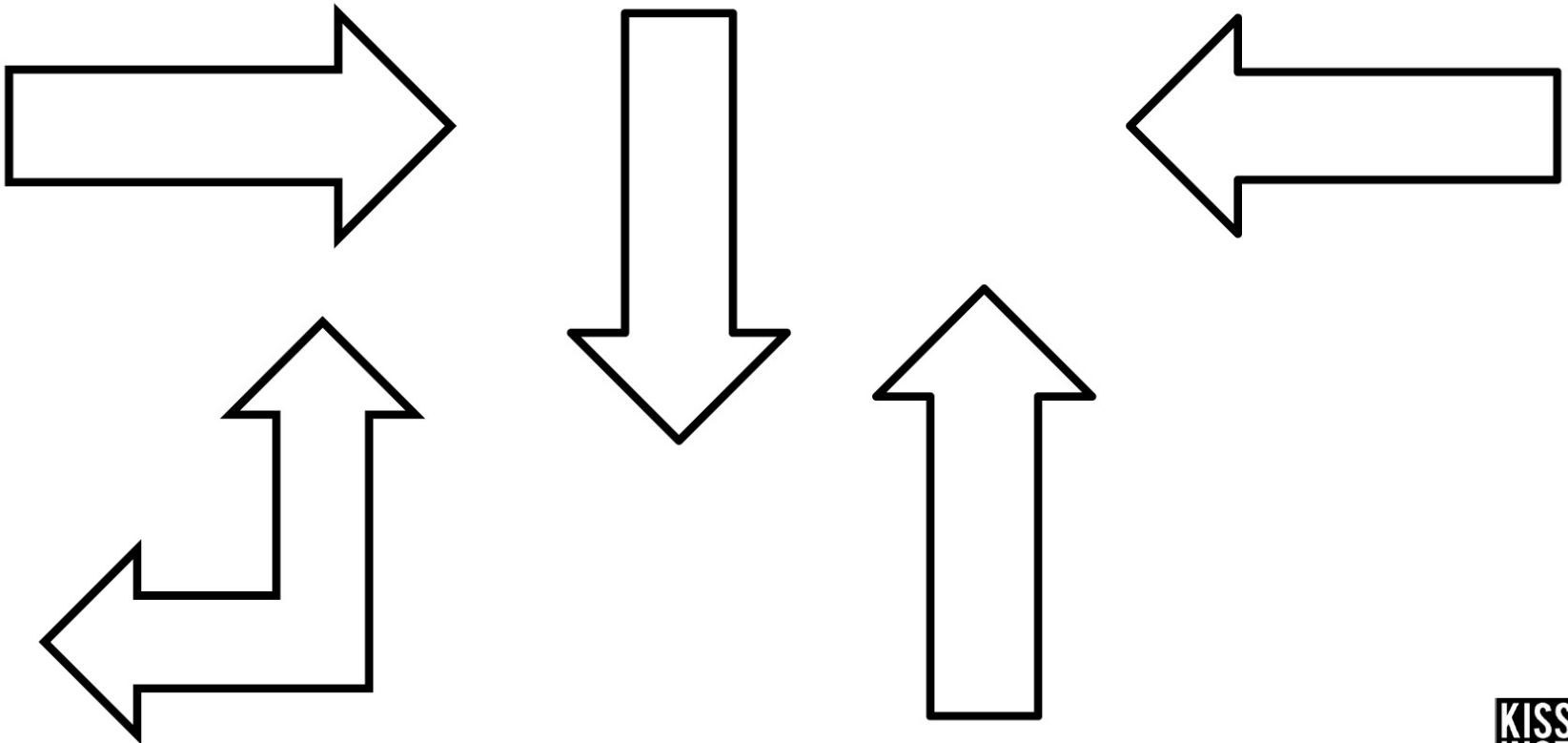
These rectangular blocks represent actions in the program

Flowcharting

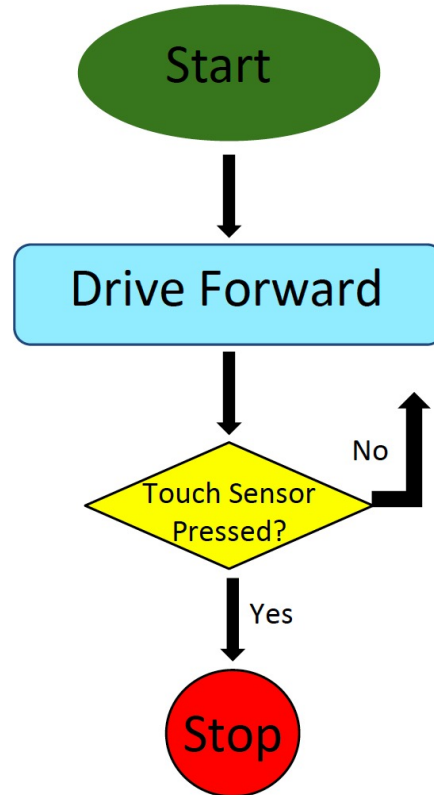


- Input and output:
 - The input and output symbol contains data that is used for input (e.g., provided by the user)
 - and data that is the result of processing (output)

Arrows are used in flowcharts to show the direction, or flow, of the program.

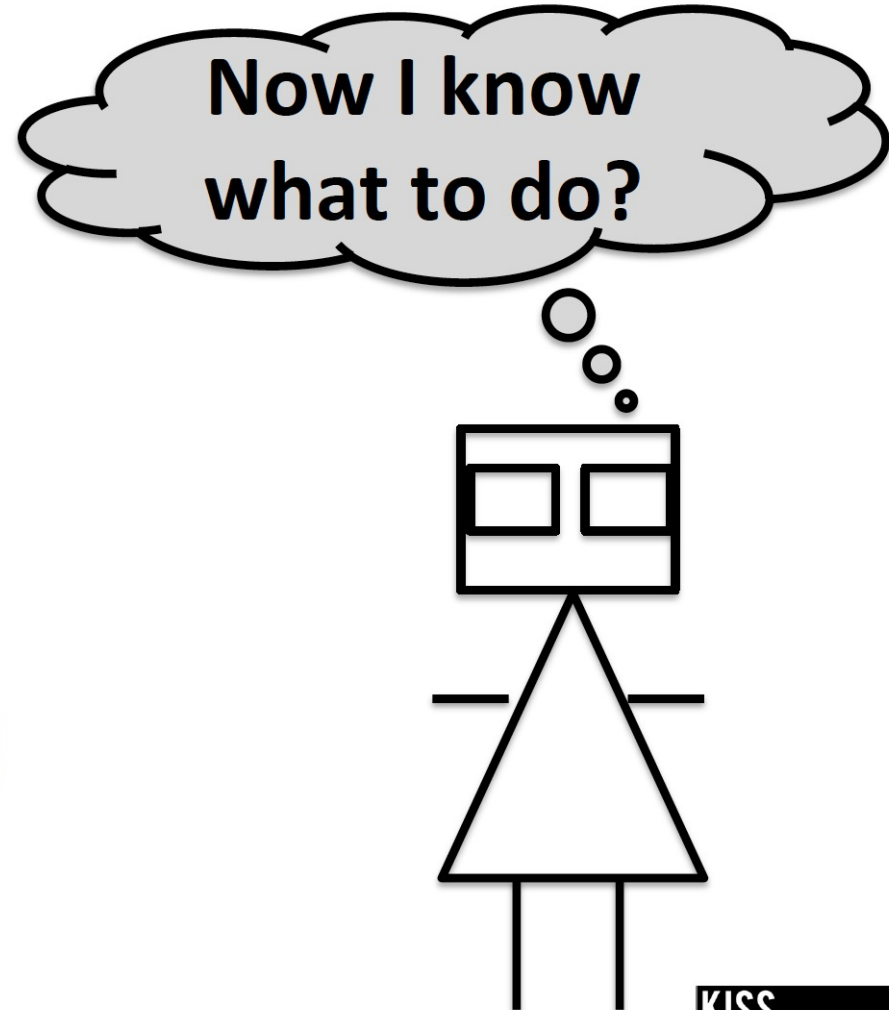
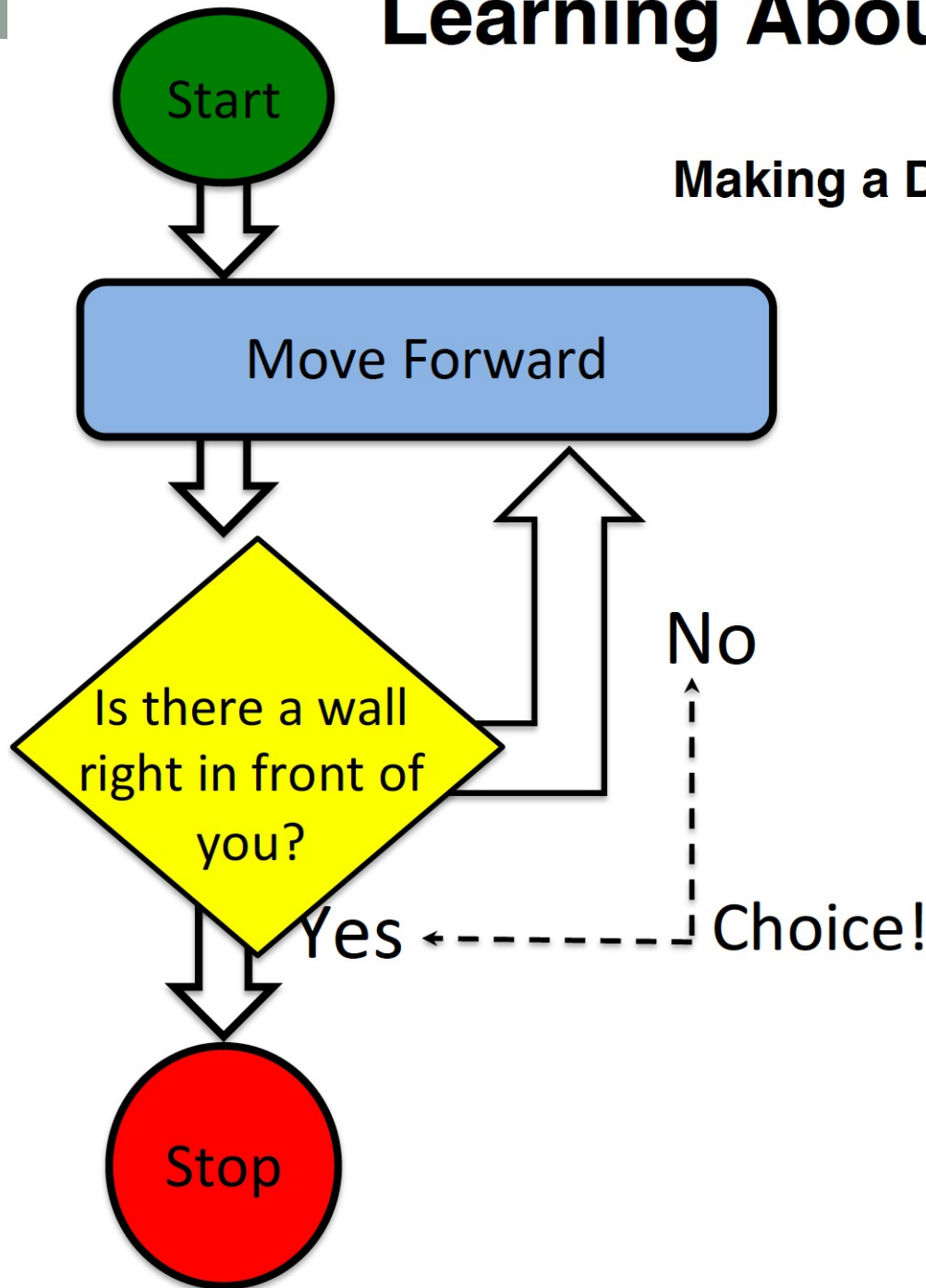


Example: flowchart



Learning About Flowcharts

Making a Decision:



FLOWCHART EXERCISES

Flowchart Exercise 1

- Robot moves forward as long as its touch sensor is not pressed
 - When the touch sensor is pressed the motors stop and the program ends
- How would you create a flowchart for this program?

Flowchart Exercise 2

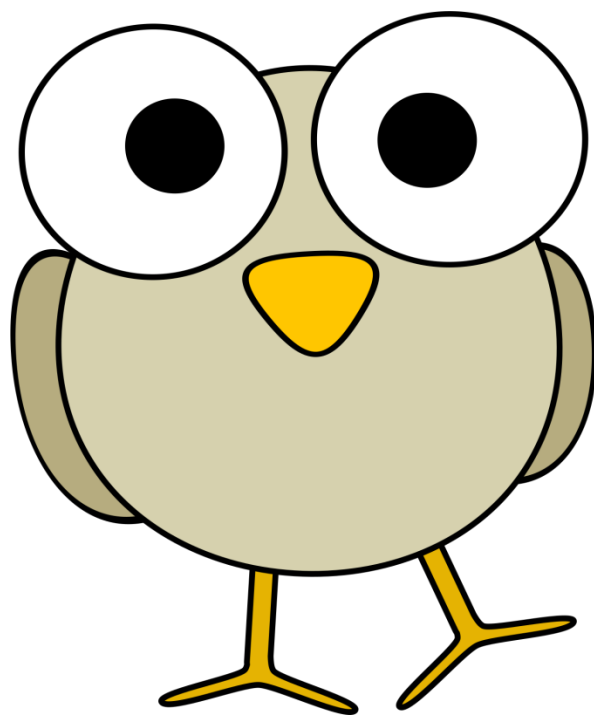
- If it's raining, bring an umbrella

Flowchart Exercise 3

- Calculate sum of two numbers
 - Get two numbers from the user
 - The second number has to be larger than the first
 - If the second number is not larger, print an error message and wait for the next number
 - Calculate the sum and print in on the screen

Flowchart Exercise 4

- Turn on oven. Cook turkey for 4 hours or until meat thermometer reaches 180 degrees



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