Programming Tools

- Flowcharts
- Pseudocode
- Algorithm

Programming Tools

- Two tools are used to convert algorithms into computer programs:
- **Flowchart**
- **Pseudocode**

Algorithm

- A step by step series of instructions for solving a problem (a recipe is an example)

Problem Solving Example

- How many stamps do you use when mailing a letter?
- Use one stamp for every five sheets of paper or fraction thereof.

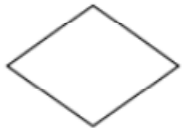
Algorithm

1. Request the number of sheets of paper; call it Sheets. *(input)*
2. Divide Sheets by 5. *(processing)*
3. Round the quotient up to the next highest whole number; call it Stamps. *(processing)*
4. Reply with the number Stamps. *(output)*

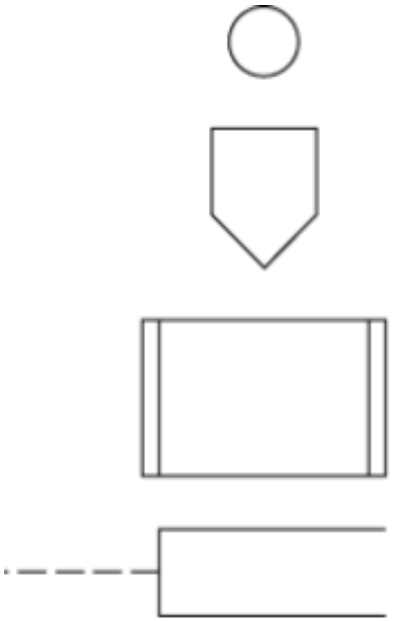
Flowcharts

- Graphically depict the logical steps to carry out a task and show how the steps relate to each other.

Flowchart symbols

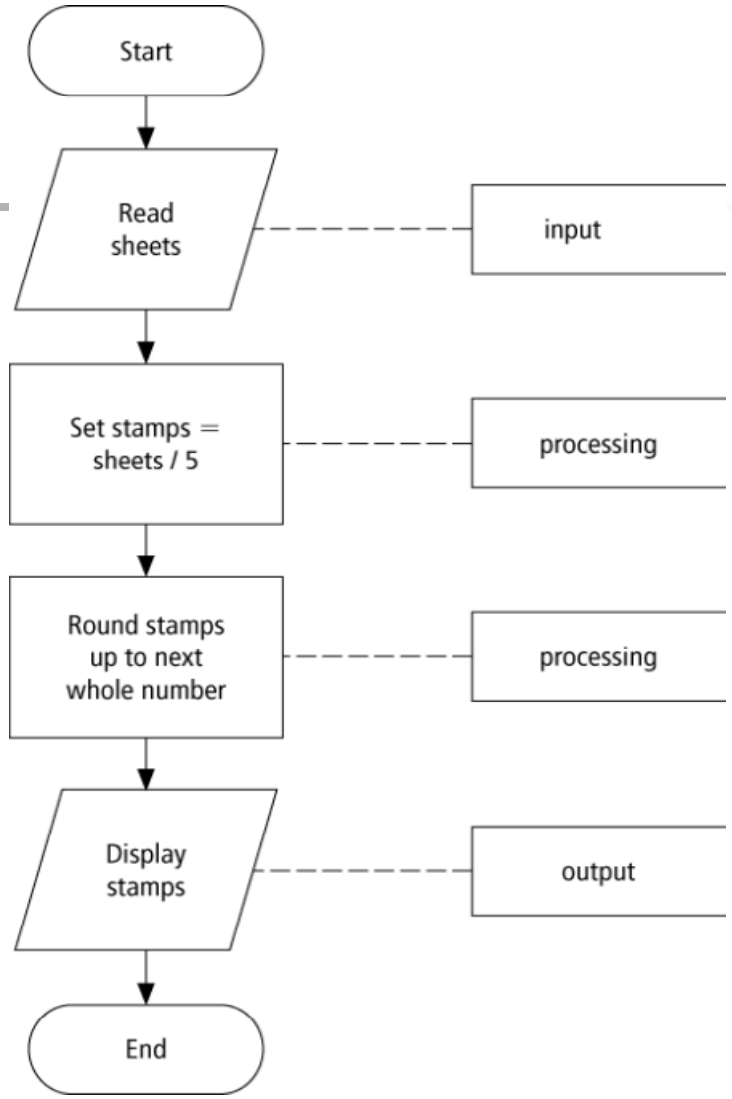
Symbol	Name	Meaning
	Flowline	Used to connect symbols and indicate the flow of logic.
	*Terminal*	Used to represent the beginning (Start) or the end (End) of a task.
	*Input/Output*	Used for input and output operations, such as reading and displaying. The data to be read or displayed are described inside.
	*Processing*	Used for arithmetic and data-manipulation operations. The instructions are listed inside the symbol.
	*Decision*	Used for any logic or comparison operations. Unlike the input/ouput and processing symbols, which have one entry and one exit flowline, the decision symbol has one entry and two exit paths. The path chosen depends on whether the answer to a question is "yes" or "no."

Flowchart symbols continued



Connector	Used to join different flowlines.
Offpage Connector	Used to indicate that the flowchart continues to a second page.
Predefined Process	Used to represent a group of statements that perform one processing task.
Annotation	Used to provide additional information about another flowchart symbol.

Flowchart example



Pseudocode

- Uses English-like phrases with some Visual Basic terms to outline the task.

Pseudocode example

Determine the proper number of stamps for a letter

Read Sheets *(input)*

Set the number of stamps to Sheets / 5 *(processing)*

Round the number of stamps up to the next whole number *(processing)*

Display the number of stamps *(output)*