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# PROGRAMMING

## BIRDS-EYE VIEW

# MAIN CONCEPTS

We can break programming into a few different concepts

1. Input/Output
2. Variables/data storage
3. If statements / Conditionals
4. Loops
5. Functions / subprograms
6. Events
7. Objects

# MAIN CONCEPTS

We can break the previous concepts into a categories

1. Flow
  2. Data Storage
  3. Organization
  4. Events
- This is a simplification these concepts do have some overlap this should give you a better view of what to expect



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# FLOW

# MAIN CONCEPTS - FLOW

- Flow is how the program executes
- Flow mainly consists of “if statements” and “loops”
- Some may consider functions a part of flow as well because functions allow us to leave the main program to a sub program





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# DATA STRUCTURES



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# MAIN CONCEPTS – DATA

- One of the smallest data structures is a variable
- Multiple variables is an array
- Arrays that can change in size are a vector

# MAIN CONCEPTS - DATA

- Some other data structures are
  - Linked Lists
  - Hash Tables
  - Stack
  - Queue
  - Trees





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# ORGANIZATION



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# MAIN CONCEPTS – ORGANIZATION

- Some different ways to organize code are
  1. Functions
  2. Objects

# MAIN CONCEPTS - ORGANIZATION

- Functions allow us to make subprograms and make a module-based program
- Like putting together, a bunch of modules for a course on math
- I can make a module on subtraction, another on addition, another on multiplication and another on division
- Each topic is independent of each other, but all the modules together make a program.



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# MAIN CONCEPTS - ORGANIZATION

- Objects are groupings of variables and functions
- Variables are the properties
- Functions are the things objects can do



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# EVENTS





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# MAIN CONCEPTS – EVENTS

- There are four main places events can happen on our computers
  1. Keyboard
  2. Mouse
  3. Window
  4. Form
- There are others depending on the type of input



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