Algorithm Development

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- An algorithm is more like the idea behind the program, but it's the idea of the steps the program will take to perform its task
- An algorithm can be expressed in any language, including English.
- The steps don't necessarily have to be specified in complete detail, as long as the steps are unambiguous

Stepwise refinement

- Write a description of the task
- Then take that description as an outline of the algorithm you want to develop.
- After that iteratively refine and elaborate that description, gradually adding steps and detail.
- Continue to do so until you have a complete algorithm that can be translated directly into a program using a programming language.
- This method is called stepwise refinement, and it is a type of top-down design.

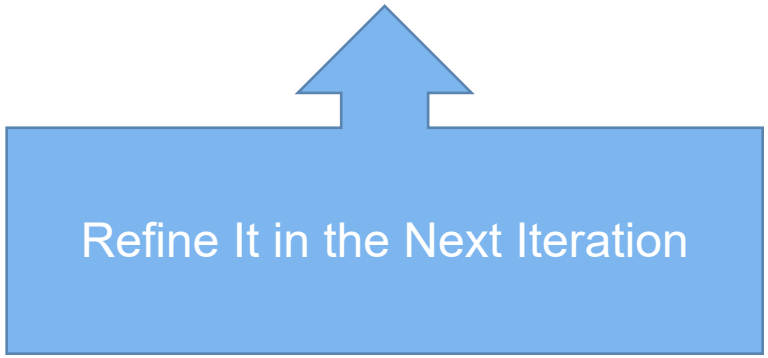
Pseudocode

- Algorithms are generally written using pseudocode

- Pseudocode consists of informal instructions that imitate the structure of programming languages without the complete detail and perfect syntax of actual program code.

Example

- Problem Description:
  - Print the Prime numbers that are less than 100



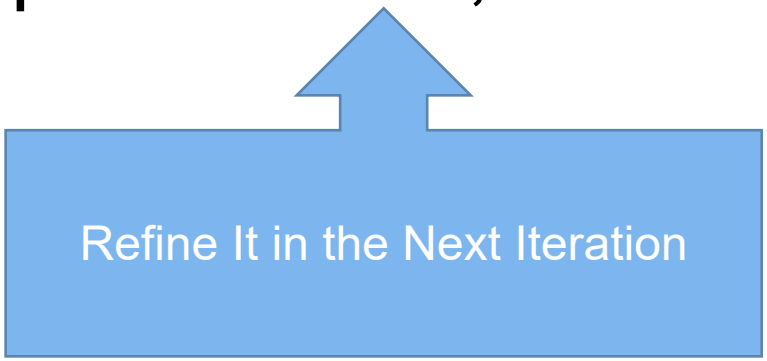
Example: first refinement

For each number less than 100

  Check if the number is prime or not;

  If the number is prime

    Print the number;



Example: second refinement

For each number less than 100

    Let divisor = 2;
    Let isPrime = true;

    While divisor is less than number and isPrime is true
        If the number is divisible by divisor
            isPrime =false;
        increment divisor;

    If the isPrime is (still) true
        Print the number

Now, It is very close to Programming

Coding Your Algorithm

- Indent your code, even indent your pseudocode!
- Know the syntax of your language – it will help you work effectively with the compiler.
- In general, when the compiler gives multiple error messages,
  - don't try to fix the second error message from the compiler until you've fixed the first one.
- Take the time to understand the error before you try to fix it.
  - Programming is not an experimental science.