The Design Phase

- understand the problem
- determine the steps a program must take to solve the problem
- describe the solution using pseudocode
  - an outline of the solution program written in informal English

*The most important step in the programming process!*

Algorithm for Mathematical Formulas

1. declare variables for the variables on the right-hand side of the formula
2. declare a variable for the result (on the left-hand side of the formula)
3. get values for all right-hand side variables
4. calculate the result using the formula; store the result in your result variable
5. output all values

Abridged Algorithm for Mathematical Formulas

1. get values for all right-hand side variables
2. calculate result and store in result variable
3. output all values
Pseudocode for
\[ c = a + b \]

input num1
input num2
sum = num1 + num2
output num1
output num2
output sum

c = a + b

public class Sum
{
    public static void main (String [] args)
    {
        double num1, num2;
        double sum;
        num1 = Input.readDouble("Enter the 1st number:");
        num2 = Input.readDouble("Enter the 2nd number:");
        sum = num1 + num2;
        Output.showValue("The first number is ", num1);
        Output.showValue("The second number is ", num2);
        Output.showValue("The sum is ", sum);
    } // method main
} // class Sum

Word Problem Example

Calculate the sum of two user input numbers. If the sum is smaller than 100 output "SMALL". Otherwise, calculate and output how much bigger the sum is than 100.

Pseudocode

input num1
input num2
sum = num1 + num2
output num1
output num2
output sum

if sum < 100
    output "SMALL"
else
    over = sum - 100
    output over
end if
Big/Small

double num1, num2;
double sum, over;

num1 = Input.readDouble("Enter the 1st number:");
num2 = Input.readDouble("Enter the 2nd number:");
sum = num1 + num2;

Output.showValue("The first number is ", num1);
Output.showValue("The second number is ", num2);
Output.showValue("The sum is ", sum);

if (sum < 100)
    Output.showMessage("SMALL");
else
    over = sum - 100;
    Output.showValue("over 100 by: ", over);

Module 10 Vocabulary

no new vocabulary

Questions?

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