Software Design Structures

Program Structures Exercise

**Instructions:**

Program Outline: Working with Numbers

During the presentation I stipulated that the module Calculating Average could be part of a larger program Working with Numbers which resulted in the following structure chart:

Diagram

Description automatically generated

We have already designed the module Calculate Average using the following techniques:

* Structure Chart
* Algorithm (using stepwise refinement)
* Data Dictionary

**Task:**

Using the same structures as above I want you to design each of the other modules contained in the high-level structure chart:

* **Adding Numbers**

Description – The program will get two numbers from the user. The program will then calculate the total when these two numbers are added together. The value of of the calculation will be displyed back to the user.

* **Dividing Numbers**

Description – The program will get two numbers from the user. The program will then calculate the total when the first numbers is divided by the second number. The value of the calculation will be displayed back to the user.

* **Mulitplying Numbers**

Description – The progam will get two numbers from the user. The program will then calculate the total by mulitplying these two numbers. The value of the calcuation will be displayed back to the user.

**Structure Charts**

**Add you structure charts here:**

Adding Numbers

Get first number

Get second number

Calculate Sum

Display result

Result = num1 + num2

num1, num2

Result

Dividing Numbers

Get first number

Get second number

Calculate division

Display result

Result = num1 / num2

num1, num2

Result

Multiplying Numbers

Get first number

Get second number

Calculate multiplication

Display result

Result = num1 x num2

num1, num2

Result

**Algorithms:**

**Add your algorithms here:**

Adding numbers

1. Get first number
2. Get second number
3. Calculate sum
   1. Result = num1 + num2
4. Display result

Dividing numbers

1. Get first number
2. Get second number
3. Calculate division
   1. Result = num1 / num2
4. Display result

Multiplying numbers

1. Get first number
2. Get second number
3. Calculate multiplication
   1. Result = num1 x num2
4. Display result

**Data Dictionary:**

**Add your data dictionary’s here:**

Adding numbers

|  |  |  |
| --- | --- | --- |
| **Variable** | **Type** | **Description** |
| num1 | Int | Hold first number value input by user |
| num2 | Int | Hold second number value input by user |
| result | Int | Hold the value of the calculated sum |

Dividing numbers

|  |  |  |
| --- | --- | --- |
| **Variable** | **Type** | **Description** |
| num1 | Int | Hold first number value input by user |
| num2 | Int | Hold second number value input by user |
| result | Int | Hold the value of the calculated division |

Multiplying numbers

|  |  |  |
| --- | --- | --- |
| **Variable** | **Type** | **Description** |
| num1 | Int | Hold first number value input by user |
| num2 | Int | Hold second number value input by user |
| result | Int | Hold the value of the calculated multiplication |

**Note:** Submit your completed document to canvas ‘Design Structures Exercise Submission’.