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Foundations of Programming Python

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Assignment 02

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How To Create a Basic Calculator

The purpose of this paper is to describe how to create a python program which does addition, subtraction, multiplication, and division based on two number inputs from a user. This paper assumes that the reader has installed python. This paper also assumes that the reader has some basic understanding of computer functions such as right clicking and double clicking.

The first step in the process is to create variables which require the user to input a number. The variable names used are fltNumber1 and fltNumber2 (See Figure 1). In order for the variables to be assigned the value from the user input the variables are set to equal an input function which ask the user for a number input (see Figure 2). This can be performed a few different ways but for this example the method used is to convert the input strings to float numbers with the ‘float’ conversion function (see Figure 3). The variable names fltNumber1 and fltNumber2 help to indicate that the variables will be converted to float numbers.

**Figure 1: Variable Names**

print("Welcome to the Calculator\n")

#The program will ask the user to input two numbers

#The program will then perform multiplication, addition and subtraction

fltNumber1 = float(input("Please enter your first number ")) #user input1

fltNumber2 = float(input("Please enter your second number ")) #user input2

fltMultiplication = fltNumber1 \* fltNumber2 #performs multiplication

fltAddition = fltNumber1 + fltNumber2 #performs addition

fltSubtraction = fltNumber1 - fltNumber2 #performs subtraction

fltDivision = (fltNumber1)/fltNumber2 #performs division

#prints the results

print("\n\nYour numbers multiplied equal: ", fltMultiplication)

print("Your numbers added together equal: ", fltAddition)

print("The difference between your first number and second number equals: ", fltSubtraction)

print("Your first number divided by the second number equals: ", fltDivision)

input("\nPress enter to continue...")

**Figure 2: Input Functions**

print("Welcome to the Calculator\n")

#The program will ask the user to input two numbers

#The program will then perform multiplication, addition and subtraction

fltNumber1 = float(input("Please enter your first number ")) #user input1

fltNumber2 = float(input("Please enter your second number ")) #user input2

fltMultiplication = fltNumber1 \* fltNumber2 #performs multiplication

fltAddition = fltNumber1 + fltNumber2 #performs addition

fltSubtraction = fltNumber1 - fltNumber2 #performs subtraction

fltDivision = (fltNumber1)/fltNumber2 #performs division

#prints the results

print("\n\nYour numbers multiplied equal: ", fltMultiplication)

print("Your numbers added together equal: ", fltAddition)

print("The difference between your first number and second number equals: ", fltSubtraction)

print("Your first number divided by the second number equals: ", fltDivision)

input("\nPress enter to continue...")

**Figure 3: String Conversion to Float Number**

print("Welcome to the Calculator\n")

#The program will ask the user to input two numbers

#The program will then perform multiplication, addition and subtraction

fltNumber1 = float(input("Please enter your first number ")) #user input1

fltNumber2 = float(input("Please enter your second number ")) #user input2

fltMultiplication = fltNumber1 \* fltNumber2 #performs multiplication

fltAddition = fltNumber1 + fltNumber2 #performs addition

fltSubtraction = fltNumber1 - fltNumber2 #performs subtraction

fltDivision = (fltNumber1)/fltNumber2 #performs division

#prints the results

print("\n\nYour numbers multiplied equal: ", fltMultiplication)

print("Your numbers added together equal: ", fltAddition)

print("The difference between your first number and second number equals: ", fltSubtraction)

print("Your first number divided by the second number equals: ", fltDivision)

input("\nPress enter to continue...")

The next step in this process is to take the values assigned from the user inputs to the variables (fltNumber1 and fltNumber2) and perform the mathematical operations of multiplication, addition, subtraction, and division. The first equation is for multiplication as shown in Figure 4. The multiplication variable fltMultiplication gets assigned the value of multiplying fltNumber1 times fltNumber2. The asterisk between fltNumber1 and fltNumber2 is the multiplication symbol. As stated earlier, the user inputs have already been converted to numbers so there’s no need for a conversion function. The addition variable (fltAddition), subtraction variable (fltSubtraction), and division variable (fltDivision) use the same number inputs from the user to perform the assigned mathematical operations. As shown in Figure 4, the ‘+’ character refers to adding the numbers, ‘-‘ character is for subtracting the first input minus the second input, and ‘/’ character is for dividing the first input from the second input.

**Figure 4: Performing Mathematical Operations**

print("Welcome to the Calculator\n")

#The program will ask the user to input two numbers

#The program will then perform multiplication, addition and subtraction

fltNumber1 = float(input("Please enter your first number ")) #user input1

fltNumber2 = float(input("Please enter your second number ")) #user input2

fltMultiplication = fltNumber1 \* fltNumber2 #performs multiplication

fltAddition = fltNumber1 + fltNumber2 #performs addition

fltSubtraction = fltNumber1 - fltNumber2 #performs subtraction

fltDivision = (fltNumber1)/fltNumber2 #performs division

#prints the results

print("\n\nYour numbers multiplied equal: ", fltMultiplication)

print("Your numbers added together equal: ", fltAddition)

print("The difference between your first number and second number equals: ", fltSubtraction)

print("Your first number divided by the second number equals: ", fltDivision)

input("\nPress enter to continue...")

Now that the mathematical equations are setup, the next step is to create print functions to display the results of each equation. The print function can be created multiple ways but for this example the structure is print(“string:”, variable) (See Figure 5). The string for the print function just helps to identify the different mathematical operations. The variable passes to the print statement the value from performing the mathematical operation assigned. Lastly, there is an input statement at the end of the script so that the program pauses after running (See Figure 5). Once the user presses enter the program closes.

**Figure 5: Print Statements**

print("Welcome to the Calculator\n")

#The program will ask the user to input two numbers

#The program will then perform multiplication, addition and subtraction

fltNumber1 = float(input("Please enter your first number ")) #user input1

fltNumber2 = float(input("Please enter your second number ")) #user input2

fltMultiplication = fltNumber1 \* fltNumber2 #performs multiplication

fltAddition = fltNumber1 + fltNumber2 #performs addition

fltSubtraction = fltNumber1 - fltNumber2 #performs subtraction

fltDivision = (fltNumber1)/fltNumber2 #performs division

#prints the results

print("\n\nYour numbers multiplied equal: ", fltMultiplication)

print("Your numbers added together equal: ", fltAddition)

print("The difference between your first number and second number equals: ", fltSubtraction)

print("Your first number divided by the second number equals: ", fltDivision)

input("\nPress enter to continue...")

The program can now be run to test that it works. As shown in figure 6, the user input two numbers (20 and 10) and is given the results of the four mathematical equations.

**Figure 6: Results of Running the Program**

