Programming Challenge

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The Functions

The first part of the code are all the different functions for the mathematical operations that will be programed into our calculator

```
# Addition Function
def add(x, y):
    return x + y

# Subtraction Function
def subtract(x, y):
    return x - y

# Multiplication Function
def multiply(x, y):
    return x * y

# Division Function
def divide(x, y):
    return x / y
#Power Funtion
def power(x,y):
  return x**y
#sqrt Function
def sqrt(x):
  return x**0.5
```

Calculator options

The next part of the code pulls up a display of all the options the calculator provides

```
30  print("Select operation.")
31  print("1.Addition(+)")
32  print("2.Subtraction(-)")
33  print("3.Multiplication(*)")
34  print("4.Division(/)")
35  print("5.Power(**)")
36  print("6.Square Root(sqrt)")
37
```

Choosing the operations and numbers

This part of the code is used for actually selecting which operations your going to be using and which numbers you will be putting into it

```
while True:
  # take input from the user
  choice = input("Enter Funtion (+)(-)(*)(/)(^)(sqrt): ")

  # check if choice is one of the four options
  if choice in ('+', '-', '*', '/', '^', 'sqrt'):
    num1 = float(input("Enter first number: "))
    num2 = float(input("Enter second number: "))
```

If / elseif Statements

The if and elseif statements make up the majority of the code. Thai is where all of the calculations are done based on the previous numbers and operations you picked.

```
if choice == '+':
  print(num1, "+", num2, "=", add(num1, num2))

elif choice == '-':
  print(num1, "-", num2, "=", subtract(num1, num2))

elif choice == '*':
  print(num1, "*", num2, "=", multiply(num1, num2))

elif choice == '/':
  print(num1, "/", num2, "=", divide(num1, num2))

elif choice == '^':
  print(num1, "^", num2, "=", power(num1, num2))

elif choice == 'sqrt':
  print('sqrt', num1, "=", sqrt(num1))
```

After the calculation

The final part of the code asks if the user would like to continue calculating or not, as well as if the person inputs an unknown variable when asked what operation it wants to be done the code with make it choose again

```
    # check if user wants another calculation
    # break the while loop if answer is no
    next_calculation = input(
      "Do you wish to do another calculation? (yes/no): ")
    if next_calculation == "no":
      break

else:
    print("Invalid Input")
```

Citation

Python program to make a simple calculator (no date) *Programiz*. Available at: https://www.programiz.com/python-programming/examples/calculator (Accessed: November 19, 2022).