

Sure, let's break down the program step by step:

1. **Function Definition:**

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```
def celsius_to_fahrenheit(celsius):
```

```
2.     fahrenheit = celsius * 9/5 + 32
```

```
3.     return fahrenheit
```

```
4.
```

Here, we define a function `celsius_to_fahrenheit()` that takes a temperature value in Celsius (`celsius`) as input and returns the equivalent temperature in Fahrenheit. Inside the function, the formula `(celsius * 9/5) + 32` is used to perform the conversion.

5. **Constants for Boiling and Freezing Points:**

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```
boiling_point_celsius = 100
```

```
6. freezing_point_celsius = 0
```

```
7.
```

These lines define constants for the boiling point and freezing point of water in Celsius. According to the instructions, water boils at 100 degrees Celsius and freezes at 0 degrees Celsius.

8. **Conversion to Fahrenheit:**

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```
boiling_point_fahrenheit =  
celsius_to_fahrenheit(boiling_point_celsius)
```

```
9. freezing_point_fahrenheit =  
celsius_to_fahrenheit(freezing_point_celsius)
```

```
10.
```

These lines call the `celsius_to_fahrenheit()` function to convert the boiling point and freezing point temperatures from Celsius to Fahrenheit. The function is called with the respective Celsius values as arguments, and the returned Fahrenheit temperatures are stored in `boiling_point_fahrenheit` and `freezing_point_fahrenheit` variables.

11. **Printing the Results:**

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```
print("Boiling point of water in Fahrenheit:",  
      boiling_point_fahrenheit)
```

```
12. print("Freezing point of water in Fahrenheit:",  
         freezing_point_fahrenheit)
```

```
13.
```

Finally, the program prints out the converted temperatures of the boiling point and freezing point of water in Fahrenheit using `print()` statements. These statements display the Fahrenheit values along with appropriate labels.

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Write a Python program to convert temperature in degree Celsius to degree Fahrenheit. If water boils at 100 degree C and freezes as 0 degree C, use the program to find out what is the boiling point and freezing point of water on the Fahrenheit scale.

(Hint: $T(^{\circ}\text{F}) = T(^{\circ}\text{C}) \times 9/5 + 32$)

```
def  
celsius_to_fahrenheit(celsius):  
    fahrenheit = celsius * 9/5 +  
32  
    return fahrenheit
```

```
# Boiling point of water in  
Celsius  
boiling_point_celsius = 100
```

```
# Freezing point of water in  
Celsius  
freezing_point_celsius = 0
```

```
# Convert boiling point and  
freezing point to Fahrenheit  
boiling_point_fahrenheit =  
celsius_to_fahrenheit(boiling_poi  
nt_celsius)  
freezing_point_fahrenheit =  
celsius_to_fahrenheit(freezing_po  
int_celsius)
```

```
print("Boiling point of water in  
Fahrenheit:",  
boiling_point_fahrenheit)  
print("Freezing point of water in  
Fahrenheit:",  
freezing_point_fahrenheit)
```

Write a Python program to calculate the amount payable if money has been lent on simple interest. Principal or money lent = P, Rate of interest = R% per annum and Time = T years. P, R, T are given by user. Then Simple

Interest (SI) = (P x R x T)/ 100.

```
def  
calculate_simple_interest(princip  
al, rate, time):  
    # Calculate simple interest  
    simple_interest = (principal  
* rate * time) / 100  
    return simple_interest
```

```
# Get input from user  
principal = float(input("Enter  
the principal amount (P): "))  
rate = float(input("Enter the  
rate of interest (R) per annum:  
"))  
time = float(input("Enter the  
time period (T) in years: "))
```

```
# Calculate simple interest  
interest =  
calculate_simple_interest(princip  
al, rate, time)
```

```
# Calculate amount payable
amount_payable = principal +
interest
```

```
# Display the result
print("Simple Interest:",
interest)
print("Amount Payable:",
amount_payable)
```

Write a program to enter two integers and perform all arithmetic operations on them.

```
def arithmetic_operations(num1,
num2):
    # Addition
    addition = num1 + num2
    # Subtraction
    subtraction = num1 - num2
    # Multiplication
    multiplication = num1 * num2
    # Division
```

```
    division = num1 / num2 #
Normal division
    # Floor Division
    floor_division = num1 // num2
    # Modulus
    modulus = num1 % num2
    # Exponentiation
    exponentiation = num1 ** num2

    return addition, subtraction,
multiplication, division,
floor_division, modulus,
exponentiation
```

```
# Get input from the user
num1 = int(input("Enter the first
integer: "))
num2 = int(input("Enter the
second integer: "))
```

```
# Perform arithmetic operations
result =
arithmetic_operations(num1, num2)
```

```
# Display the results
print("Addition:", result[0])
```

```
print("Subtraction:", result[1])
print("Multiplication:",
result[2])
print("Division:", result[3])
print("Floor Division:",
result[4])
print("Modulus:", result[5])
print("Exponentiation:",
result[6])
```

Write a program to swap two numbers using a third variable.

```
def swap_with_temp(a, b):
    # Temporary variable to hold
the value of 'a'
    temp = a
    # Assign the value of 'b' to
'a'
    a = b
```

```
    # Assign the value of  
'temp' (which holds the original  
value of 'a') to 'b'  
    b = temp  
    return a, b
```

```
# Input two numbers from the user  
num1 = float(input("Enter the  
first number: "))  
num2 = float(input("Enter the  
second number: "))
```

```
# Call the function to swap the  
numbers  
num1, num2 = swap_with_temp(num1,  
num2)
```

```
# Print the swapped numbers  
print("After swapping:")  
print("First number:", num1)  
print("Second number:", num2)
```

Write a program to swap two numbers without using a third variable.


```
def swap_without_temp(a, b):  
    # Swapping without a  
    temporary variable  
    a = a + b  
    b = a - b  
    a = a - b  
    return a, b
```

```
# Input two numbers from the user  
num1 = float(input("Enter the  
first number: "))  
num2 = float(input("Enter the  
second number: "))
```

```
# Call the function to swap the  
numbers  
num1, num2 =  
swap_without_temp(num1, num2)
```

```
# Print the swapped numbers  
print("After swapping:")  
print("First number:", num1)  
print("Second number:", num2)
```

