

Exercises

1. Write a program that prints the numbers from 1 to 10 using a while loop.
2. Write a program that asks the user to enter a number and prints the multiplication table for that number up to 10.
3. Write a program that generates a random number between 1 and 10 and asks the user to guess the number. If the user's guess is too high or too low, the program should give a hint and ask the user to guess again.
4. Write a program that asks the user to enter a password. The program should keep asking the user to enter a password until the password matches a predefined password.
5. Write a program that asks the user to enter a series of numbers, one at a time. The program should stop asking for numbers when the user enters a negative number. The program should then print the sum of all the positive numbers entered.
6. Write a program that asks the user to enter a number and calculates the factorial of that number using a while loop.
7. Write a program that generates a random number between 1 and 100 and asks the user to guess the number. The program should give the user hints to help them guess the number, and the user should be allowed to guess up to 10 times.
8. Write a program that asks the user to enter a series of numbers and prints the largest and smallest numbers entered. The program should stop asking for numbers when the user enters the word "done".
9. Write a program that asks the user to enter a string and counts the number of vowels in the string using a while loop.
10. Write a program that asks the user to enter a series of numbers and prints the sum of the even numbers entered. The program should stop asking for numbers when the user enters a number that is not an integer.

Exercises and Solution

1. Write a program that prints the numbers from 1 to 10 using a while loop.

```
i = 1
```

```
while i <= 10:
```

```
    print(i)
```

```
    i += 1
```

2. Write a program that asks the user to enter a number and prints the multiplication table for that number up to 10.

```
num = int(input("Enter a number: "))
```

```
i = 1
```

```
while i <= 10:
```

```
    print(num, "x", i, "=", num * i)
```

```
    i += 1
```

3. Write a program that generates a random number between 1 and 10 and asks the user to guess the number. If the user's guess is too high or too low, the program should give a hint and ask the user to guess again.

```
import random
```

```
number = random.randint(1, 10)
```

```
while True:
```

```
    guess = int(input("Guess a number between 1 and 10: "))
```

```
    if guess == number:
```

```
        print("Congratulations, you guessed the number!")
```

```
        break
```

```
    elif guess < number:
```

```
        print("Too low, try again.")
```

```
    else:
```

```
        print("Too high, try again.")
```

4. Write a program that asks the user to enter a password. The program should keep asking the user to enter a password until the password matches a predefined password.

```
password = "secret"
```

```
while True:
```

```
    guess = input("Enter the password: ")
```

```
    if guess == password:
```

```
        print("Correct password!")
```

```
        break
```

```
    else:
```

```
        print("Incorrect password, try again.")
```

5. Write a program that asks the user to enter a series of numbers, one at a time. The program should stop asking for numbers when the user enters a negative number. The program should then print the sum of all the positive numbers entered.

```
sum = 0
```

```
while True:
    num = int(input("Enter a number: "))
    if num < 0:
        break
    sum += num
print("The sum of the positive numbers entered is:", sum)
```

6. Write a program that asks the user to enter a number and calculates the factorial of that number using a while loop.

```
num = int(input("Enter a number: "))
factorial = 1
i = 1
while i <= num:
    factorial *= i
    i += 1
print("The factorial of", num, "is", factorial)
```

7. Write a program that generates a random number between 1 and 100 and asks the user to guess the number. The program should give the user hints to help them guess the number, and the user should be allowed to guess up to 10 times.

```
import random
number = random.randint(1, 100)
guesses = 0
while guesses < 10:
    guess = int(input("Guess a number between 1 and 100: "))
    guesses += 1
    if guess == number:
        print("Congratulations, you guessed the number!")
        break
    elif guess < number:
        print("Too low, try again.")
    else:
        print("Too high, try again.")
else:
    print("You have exceeded the maximum number of guesses. The number was", number)
```

```
print("Sorry, you've run out of guesses. The number was", number)
```

8. Write a program that asks the user to enter a series of numbers and prints the largest and smallest numbers entered. The program should stop asking for numbers when the user enters the word "done".

```
largest = None
```

```
smallest = None
```

```
while True:
```

```
    num = input("Enter a number or type 'done': ")
```

```
    if num == "done":
```

```
        break
```

```
    try:
```

```
        num = int(num)
```

```
        if largest is None or num > largest:
```

```
            largest = num
```

```
        if smallest is None or num < smallest:
```

```
            smallest = num
```

```
    except ValueError:
```

```
        print("Invalid input")
```

```
if largest is not None and smallest is not None:
```

```
    print("The largest number entered was", largest)
```

```
    print("The smallest number entered was", smallest)
```

9. Write a program that asks the user to enter a string and counts the number of vowels in the string using a while loop.

```
string = input("Enter a string: ")
```

```
vowels = "aeiouAEIOU"
```

```
count = 0
```

```
i = 0
```

```
while i < len(string):
```

```
    if string[i] in vowels:
```

```
        count += 1
```

```
    i += 1
```

```
print("The number of vowels in the string is", count)
```

10. Write a program that asks the user to enter a series of numbers and prints the sum of the even numbers entered. The program should stop asking for numbers when the user enters a number that is not an integer.

```
sum = 0
```

```
while True:
```

```
    try:
```

```
        num = int(input("Enter a number: "))
```

```
        if num % 2 == 0:
```

```
            sum += num
```

```
    except ValueError:
```

```
        break
```

```
print("The sum of the even numbers entered is", sum)
```