Student Name: _____

Class: _____

Due Date: _____

Introduction to Python

Welcome to the World of Python

Python is a high-level, interpreted programming language that is widely used in various fields, including web development, scientific computing, and data analysis.

Activity 1: Basic Syntax

1. What is the syntax for printing a string in Python?

2. What is the difference between a list and a tuple in Python?

3. Write a Python program to calculate the area and perimeter of a rectangle, given the length and width.

Conditional Statements

Purpose of the `if` statement

The `if` statement is used to control the flow of a program based on conditions or decisions.

Activity 2: Conditional Statements

1. What is the purpose of the `if` statement in Python?

2. Write a Python program to determine whether a given number is even or odd, using conditional statements.

Functions

Purpose of the `def` statement

The `def` statement is used to define a function.

Activity 3: Functions

1. What is the purpose of the `def` statement in Python?

2. Write a Python program to calculate the sum of all numbers in a list, using a function.

Data Analysis

Purpose of the `import` statement

The `import` statement is used to import modules or libraries.

Activity 4: Data Analysis

1. What is the purpose of the `import` statement in Python?

2. Write a Python program to analyze a dataset, using the `pandas` library.

Game Development

Purpose of the `while` loop

The `while` loop is used to repeat a block of code for a specified number of times.

Activity 5: Game Development

1. What is the purpose of the `while` loop in Python?

2. Write a Python program to create a simple game, using a `while` loop.

Conclusion

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In this worksheet, we have introduced you to the basics of Python programming and provided you with activities and questions to help you learn and practice your skills.

Glossary

- **Variable**: A named storage location that holds a value.
- **List**: A collection of values that can be of any data type, including strings, integers, and floats.
- **Function**: A block of code that can be called multiple times from different parts of a program.
- **Conditional statement**: A statement that controls the flow of a program based on conditions or decisions.
- **Loop**: A statement that repeats a block of code for a specified number of times.

Answers

Answers

1. The syntax for printing a string in Python is `print("Hello, World!")`.
2. A list is a mutable collection of items, while a tuple is an immutable collection of items.
3. The Python program to calculate the area and perimeter of a rectangle is:

```
# Import necessary modules
import math

# Define variables
length = 5
width = 3

# Calculate area and perimeter
area = length * width
perimeter = 2 * (length + width)

# Print results
print("Area:", area)
print("Perimeter:", perimeter)
```

4. The purpose of the `if` statement in Python is to control the flow of a program based on conditions or decisions.
5. The Python program to determine whether a given number is even or odd is:

```
# Define variables
num = 5

# Use conditional statement to determine if num is even or odd
if num % 2 == 0:
    print("Even")
else:
    print("Odd")
```

6. The purpose of the `def` statement in Python is to define a function.
7. The Python program to calculate the sum of all numbers in a list is:

```
# Define function
def sum_list(numbers):
    total = 0
    for num in numbers:
        total += num
    return total

# Define list of numbers
numbers = [1, 2, 3, 4, 5]

# Call function and print result
print(sum_list(numbers))
```

8. The purpose of the `import` statement in Python is to import modules or libraries.
9. The Python program to analyze a dataset is:

```
# Import pandas library
import pandas as pd
```

```
# Load dataset
data = pd.read_csv("data.csv")

# Print summary statistics
print(data.describe())
```

10. The purpose of the `while` loop in Python is to repeat a block of code for a specified number of times.