Python Programming Worksheet: Understanding Sequence, Selection, and Repetition

This worksheet is to teach introduce beginners to these fundamental programming concepts of sequence, selection, and repetition in Python. Below, I've outlined a worksheet that incorporates explanations, examples, and exercises to help learners grasp these concepts.

Objective:

By the end of this worksheet, you will be able to understand and implement sequence, selection, and repetition constructs in Python.

Prerequisites:

- Basic understanding of Python syntax
- Python environment setup (like IDLE, Jupyter Notebook, or any IDE)

Part 1: Sequence

Explanation: In programming, a sequence is the order in which statements are executed or evaluated. In Python, code is executed line by line, from top to bottom.

Example:

```python
# This is a sequence of statements.
print("Hello, world!")  # First statement
x = 5 + 10  # Second statement
print(x)  # Third statement
```

Exercise 1: Write a Python script that:

1. Asks the user for their name.
2. Asks the user for their favorite color.
3. Prints a message greeting the user and mentioning their favorite color.

Part 2: Selection

Explanation: Selection is used to make decisions in your code, allowing you to execute different statements based on certain conditions. This is commonly implemented using `if`, `elif`, and `else` statements.

Example:

```python
age = int(input("Enter your age: "))
if age >= 18:
    print("You are an adult.")
else:
    print("You are a minor.")
```

Exercise 2: Write a Python program that:

1. Asks the user to enter a number.
2. Checks if the number is positive, negative, or zero.
3. Prints the result to the user.

Part 3: Repetition

Explanation: Repetition allows you to execute a block of code multiple times. This can be achieved using loops, such as `for` and `while`.

Example:

```python
# Using a for loop to print numbers 1 through 5
for i in range(1, 6):
    print(i)
```

Exercise 3: Write a Python script that:

1. Asks the user how many times they want to repeat "Hello, Python!".
2. Repeats printing "Hello, Python!" that number of times.

Bonus Challenge:

Combine sequence, selection, and repetition in a single program that:

1. Repeatedly asks the user to enter a command.
2. If the user enters "greet", ask for their name and greet them.
3. If the user enters "quit", terminate the program.
4. For any other input, print "Unknown command".

Hint: Use a while loop for repetition, an if-else statement for selection, and sequence to structure your commands.

Submission:

- Submit your Python scripts for exercises 1, 2, 3, and the bonus challenge.
- Make sure your code is well-commented to explain your logic.