Term 4 Final Exam Review

Grade 10

Python Basics Review

Variables

Think of a variable as a box that can hold different things. In Python, you can put anything into this box, like a number or a word. For example:

```python
x = 5
name = "John"
```

Here, `x` is a box holding the number 5, and `name` is a box holding the word "John".

User Input

Sometimes, we want to ask the person using our program for some information. We can do this with the `input()` function. For example:

```python
name = input("What is your name? ")
print("Hello, " + name)
```

This program asks the user for their name, then says hello to them.

Basic Arithmetic Operations

Python can do math! Here are the symbols we use for different operations:

- Addition (`+`)
- Subtraction (`-`)
- Multiplication (`*`)
- Division (`/`)

For example:

```
x = 10
y = 2
print(x + y)   # This will print: 12
```

Conditionals

Conditionals are how we make decisions in our program. We can use `if`, `elif` (short for "else if"), and `else` to do different things depending on what's happening. For example:

```
x = 5
if x > 0:
    print("x is positive")
elif x < 0:
    print("x is negative")
else:
    print("x is zero")
```

This program checks if `x` is positive, negative, or zero, and prints a message accordingly.

Loops

Loops let us do something over and over again. Python has two types of loops - `for` and `while`.

- A `for` loop goes through a list (or other collection of items) one by one:

```
for i in range(5):
    print(i)
```

- A `while` loop keeps going as long as something is true:

```
i = 0
while i < 5:
    print(i)
    i += 1
```

This `while` loop prints the numbers from 0 to 4.