**Topic 5 - Variable Names: Legal and Illegal**

**1. Rules for Naming Variables**

By now, you've learned some rules for naming variables in Python:

1. **No Quotation Marks**: Variable names cannot be enclosed in quotation marks.
2. **No Spaces**: You can't have spaces in a variable name.
3. **No Leading Numbers**: A variable name can't be a number or start with one.

**2. Reserved Words (Keywords)**

Python also has special reserved words known as **keywords**—these are words Python uses as programming instructions, so you can’t use them as variable names. Some common keywords are:

*and, as, assert, break, class, continue, def, elif, else, except, False,*

*finally, for, from, global, if, import, in, is, lambda, None, nonlocal,*

*not, or, pass, print, raise, return, True, try, while, with, yield*

**Note**: You don’t need to memorize this list! If you accidentally use a reserved word as a variable name, Python will let you know with a **syntax error** message.

**3. Additional Rules for Variable Names**

Here are some more guidelines for naming variables in Python:

* A variable name **can contain** lowercase and uppercase letters, numbers, and underscores (\_).
* **Capitalization matters**: Python is case-sensitive, so name, Name, and NAME are all distinct variables.

For example:

***age = 30***

***Age = 25***

***print(age) # Output: 30***

***print(Age) # Output: 25***

* It’s recommended to use **underscores to separate words** in multi-word variables. This makes code more readable and easier to understand.

Examples:

***student\_name = "Amit"***

***student\_age = 20***

* **Descriptive names** help make your code more understandable. For instance, student\_age is clearer than x.

However, balance **readability with conciseness**. For example, while top\_score\_in\_exam\_of\_semester\_one is clear, it may be too long. A shorter version, like semester1\_top\_score, might be a better choice.

**4. Examples of Legal and Illegal Variable Names**

| **Variable Name** | **Legal or Illegal** | **Reason** |
| --- | --- | --- |
| student\_age | Legal | Contains only lowercase letters and an underscore. |
| 1st\_place | Illegal | Starts with a number. |
| response\_time | Legal | Contains only lowercase letters and underscores. |
| bestActor | Legal | Contains uppercase letters and lowercase letters. |
| if | Illegal | Python reserved keyword. |

**5. Summary**

Understanding Python's rules for naming variables will help you avoid syntax errors. Descriptive and well-named variables make your code more readable and easier to maintain over time.