

# Programming Language Source Code

When making software, we tell the computer how our program should run by writing *source code* that follows the rules of a *programming language*. Let's look at the source code for a simple program written in the **Python** programming language.



*Use this as a reference when practicing coding!*

## Storing Data

### Constant

A named location for data storage with a fixed (unchanging) value.

### Variable

A named location for data storage whose value may change.

## Iteration

Repeatedly executing a block of code, typically with a loop.

### For Loop

Executes a block of code once *for* each value in a sequence (such as a range of number, or a list of values).

### While Loop

Repeatedly executes a block of code *while* some condition remains true.

## Data Types

### Dictionary

A data structure that maps *keys* to *values*, supporting the retrieval of the value for a given key.  
E.g. {'city': 'AKL', 'country': 'NZ'}

### List

A data structure that stores an ordered sequence of values.  
E.g. ['North', 'South', 'Stewart']

### String

A data value representing text.

```
BIRD_FACTS = {  
    'kea': [  
        'Kea are parrots.',  
        'Kea have orange feathers under their wings.'  
    ],  
    'kakapo': [  
        'Kakapo are parrots.',  
        'Kakapo are nocturnal.'  
    ]  
}
```

```
def print_facts_for_bird(bird):  
    """Prints facts about the given bird."""  
    list_of_facts = BIRD_FACTS[bird]  
    for fact in list_of_facts:  
        print(fact)
```

```
user_input = ''  
while user_input != 'exit':  
    user_input = input('Enter the name of a bird: ')  
    if user_input in BIRD_FACTS:  
        print_facts_for_bird(user_input)  
    else:  
        print('Hmmm, I do not know that bird.')
```

## Functions

Blocks of code that are defined once and called from other places in code.

### Function Definition

The block of code to be executed whenever the function is called.

### Function Parameter

A variable that can be assigned a different value each time a function is called.

### Function Call

A piece of code that executes a previously defined function.

## Control Flow

### If Statement

Chooses which block of code to execute based on a condition.

### Boolean Expression

An expression that evaluates to a value of either `True` or `False`.

### Condition

A Boolean expression that is used to make a binary decision.