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PYTHON PROGRAMMING FUNDAMENTALS



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Learning Objectives

- Know key control structures
- Know how to do small programs
- Know what a function is
- Know how to create simple functions



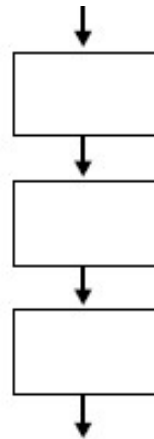
Control Structure

- Sequencing
- Decision
- Loops



Sequencing

- By default, in a structured language code is interpreted from right to left and top to bottom.



Decision

IF-THEN Statement

```
# A simple decision
```

```
age=?
```

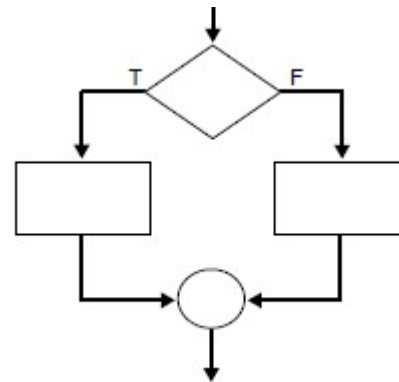
```
if (age >= 18) :
```

```
    print("You can vote!")
```



Decision

- IF-THEN statements test for only one action.
- If the condition is true, then an action occurs. If the condition is false, take an alternate action.



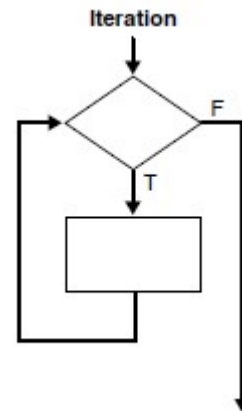
Decision

```
#If-elif-else structure
if age < 3:
    ticketPrice= 0
elif age < 18:
    ticketPrice = 5
else: ticketPrice = 10
```



Loops

- A **WHILE** loop is a process in which a loop is initiated until a condition has been met.
- This structure is useful when performing iterative instructions to satisfy a certain parameter.



Loops

- The loop ends as a result of value entered by user

```
msg = ''  
while msg != 'exit':  
    msg = input("Write a message: ")  
    print(msg)
```

Functions

- Function is a named blocks of code that is used to accomplish a specific purpose.
- Information passed to a function is an argument
- The information received by the function is a parameter



Function

- **Simplified Function**

```
def greet ():  
    # greeting  
    print ("Hello!")
```

- **To call the function, it's called by name:**

```
greet ()
```



Function

- For the function to have greater use there is need to pass arguments

```
#argument pass
def greetUser (name):
    """ "Show a custom message." """
    print ("Hello," + name + "!" )
```

- Call Example

```
greetUser ("John")
```



Function

- We can have default parameter

```
#argument pass
```

```
def greetUser (name = 'Zézinho'):  
    """ "Show a custom message." """  
    print ("Hello," + name + "!" )
```

- `welcome_user ()`

```
greetUser ("John")
```



Function

- Return a value

```
def addValues (x, y):  
    """  
        takes two values and returns the sum.  
    """  
    return x + y
```

- **sum = addValues (3,5)**

```
print (sum)
```



Function

- **Sum with default values**

```
def addValues (x = 0, y = 0, z = 0):  
    """  
        add multiple values and return the sum.  
    """  
    return x + y + z
```

- **Call function**

```
sum = addValues (3,4)  
print (sum)
```