

Strings

What is a String?

A **string** is a sequence of characters, contained within a pair of quotes. Strings are literal values.

- 'Hello There!'
- "Hello There!"
- "That's great"

Uses of Strings

- For general screen display:
`print 'Welcome to the GPA Program'`
- As a prompt for input:
`name = input('Enter your name: ')`
- For storage of information in a file

Some String Operations

- Determine the length of a given string
- Select individual chars in a string

String Length Operation

Suppose ask a user to select their own password, limited to 18 characters.

If can determine the length of the string entered, then can check for exceeded password limit errors.

String Length Operation (cont.)

String length operator in Scratch:

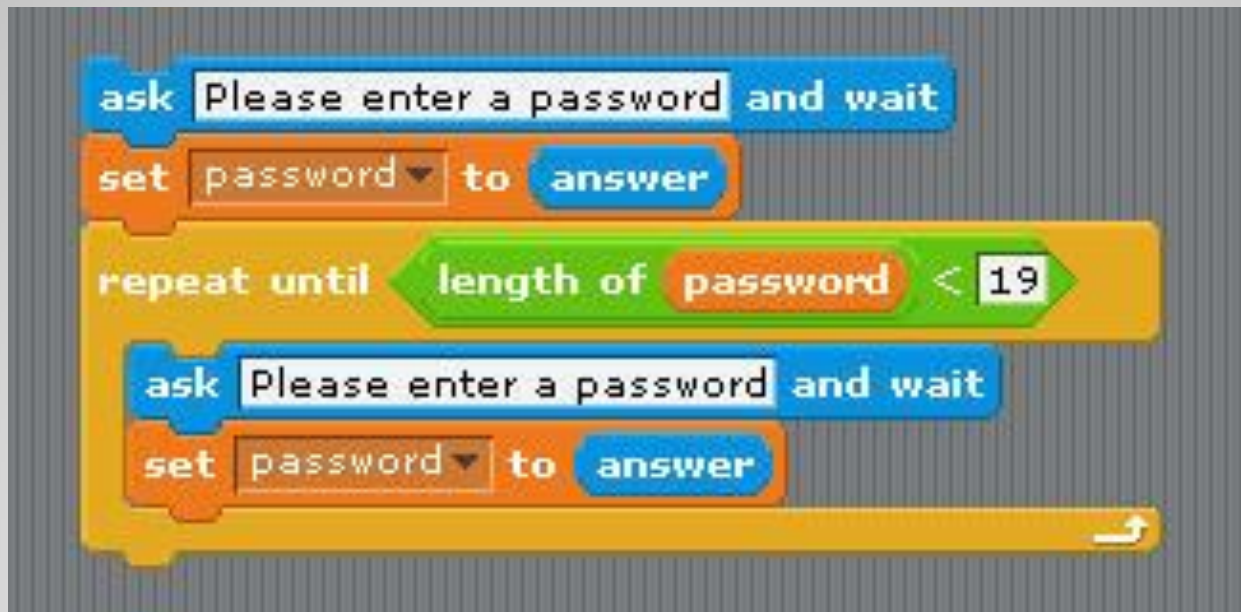


String length operator in Python:

```
len('World')
```

Scratch Example

Continues to prompt user to enter a new password, until password no more than 18 characters.



Python Version

Continues to prompt user to enter a new password, until password no more than 18 characters.

```
password = input('Please enter a password:')  
while len(password) > 18  
    password = input('Please enter a password:')
```


Character Select Operation

Suppose ask user to enter a new password of any length containing letters only, no digits or special characters are allowed.

If can look at each characters one-by-one in a string, then can determine if entered passwords are valid or not.

Character Select Operation (cont.)

Character select operator in Scratch selecting the first character, 'w'



Character select operator in Python selecting the first character, 'w'

`'world' [0]`

Note that in Scratch, first character of a string is at location 1, and in Python it is at location 0.

Scratch Example

Continues to prompt user to enter a new password if characters other than lower case letters entered.

```
set Valid to False
repeat until Valid = True
  ask Please enter a password containing lower case letters only and wait
  set password to answer
  set i to 1
  set Valid to True
  repeat length of password
    if letter i of password < a or letter i of password > z
      set Valid to False
      change i by 1
    if Valid = False
      say Invalid characters found for 2 secs
  say Valid Password Entered
```

Python Version

```
valid = False
```

```
while not valid
```

```
    print 'password may contain only lower case letters'
```

```
    password = input('Please enter a password: ')
```

```
    i = 0
```

```
    valid = True
```

```
    for letter in password
```

```
        if letter < 'a' or letter > 'z'
```

```
            valid = False
```

```
    if not valid
```

```
        print 'Invalid characters found'
```

```
print 'Valid password entered'
```