# 🧵 Strings
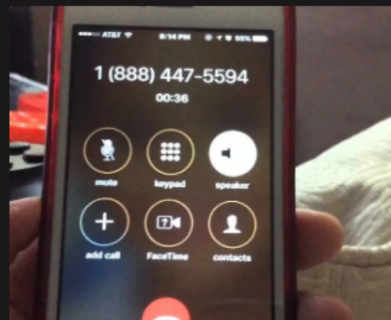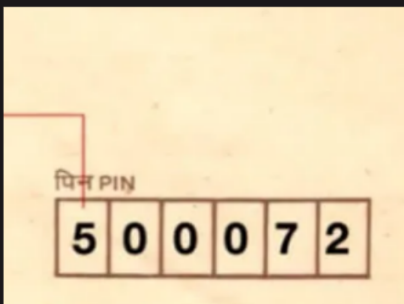


- The string is a group of characters

- It can include a-z, A-z, 0-9, and also special characters like @,$, etc

- Each character has an index, Starting from 0 to the length of the string.

## Need of Strings

- Lots of information we stored, it actually stored as a string

- For Example, The name of the product, Pincode, and mobile number also, Since we will not perform any mathematical operation on mobile numbers, we considered i a string.

## How to declare a String?

```
 s = "Masai School"

# There is a total of 12 characters in this string.
```

## Code 1: Declare a string variable and print it.

```
name = "Masai";
print(name);

print(name[0]);   # M
print(name[1]);   # a
print(name[2]);   # s
print(name[3]);   # a
print(name[4]);   # i
print(name[5]);   # IndexError: string index out of range
```

## Code 2: Find the length of the String.

```
name = "Jantar Mantar"
print(len(name))    # 13
```

# Real-world use of String

## Code 3: Find whether the user enters a valid length password of at least 6 characters.

```
password = "naved@8755"
if(len(password)< 6):
  print("Invalid : Your Password must be atleast 6 characters long");
else:
  print("Valid Password");
```

# Loop in Strings

## Code 4: Run loop and print each character of String.

```
name = "Masai School"
for i in range(0, len(name)):
    print(name[i])
```

## Code 5: Run loop on the string and add each character to the third variable and print that variable.

```
name = "Masai School"
bag = "";
for i in range(0, len(name)):
  bag = bag + name[i];

print(bag);
```

# Lists vs Strings

- We can use an List to store the sequence of characters.

## Code 6: Store "Masai" in String and List.

```
name1 = "Masai";
print(name1);
print(name1[0]);

name2 = ["M", "a", "s", "a", "i"];
print(name2);
print(name2[0]);
```



Mutable-
An object whose internal state can be change

Immutable
An object whose internal state cannot be change

# Strings are immutable

Once the string is declared and initialized, it cannot be updated later.

Suppose you are creating an E-commerce website for your company. What things you will make mutable and immutable.
1-Transaction history
2- Date and time

3- Account Profile such as avatar, name, age, and address

4-Discount coupons



## Code 7: Update Character in String

```
name = "Masai";
name[0] = "N";
```

```
print(name);
#TypeError: 'str' object does not support item assignment
```

- **Let's use a List to update the string**

## Code 8: Update Character in List

```
name = ["M"," a"," s"," a", "i"]
name[0] = "N";
print(name);
```

We can conclude that strings are immutable. Once it is created, it cannot be updated later but in the List it is possible.

# Update Strings

- We already know that we can not update the string but we can update the List.

## Code 9: Update String using List and third variable. [First Method]

```
# **I Way**
name = "Masai";
name2 = []

for i in range(0, len(name)):
  name2.append(name[i]);


name2[0] = "N";
bag=""
for i in range(0, len(name2)):
  bag = bag + name2[i];

print(bag)
```

## Code 10: Update String using List and third variable. [Second Method]

```
# **II Way**

name = "Masai"
```

```
output = ""
for i in range(0,len(name)):
 if i==0:
    output = output + "N";
 else:
    output = output + name[i];
print(output)
```

# Remove char in Strings

- loop in the given string and don't add that character which you want to remove otherwise add all.

### Code 11: Remove a char from the String

```
name = "Masai"
output = ""

for i in range(0, len(name)):

  if(name[i] != "s"):
    output = output + name[i];

print(output)
```

# Problems in Strings

### Code 12: Count the names starting with N or n

```
names = ["Nobita", "Naruto", "Shinchan","PowerRangers","Aladin","Noddy"]
count=0

for i in range(0,len(names)):
 name = names[i];

  if (name[0]=="N" or name[0]=="n")
      count++;

print(count)
```

### Code 13: Count the names which contain A in them.

```
names= ["Nobita", "Naruto", "Noddy", "Shinchan", "Oswald"];
count=0

for i in range(0,len(names)):

   name = names[i]
  for j in range(0,len(name)):

    if(name[j]=='a' or name[j]=='A'):

       count++;
       break;

print(count)
```

## Code 14: Convert lower case to upper case.

```
name="masai"
lower = "adcdefghijklmnopqrstuvwxyz"
upper = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
output=""

for i in range(0,len(name)):
  for  j in range(0,len(lower)):
   if (name[i] == lower[j]):
     output = output + upper[j];

print(output)
```

**Happy Coding!**