PYTHON ARRAY

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PYTHON ARRAY

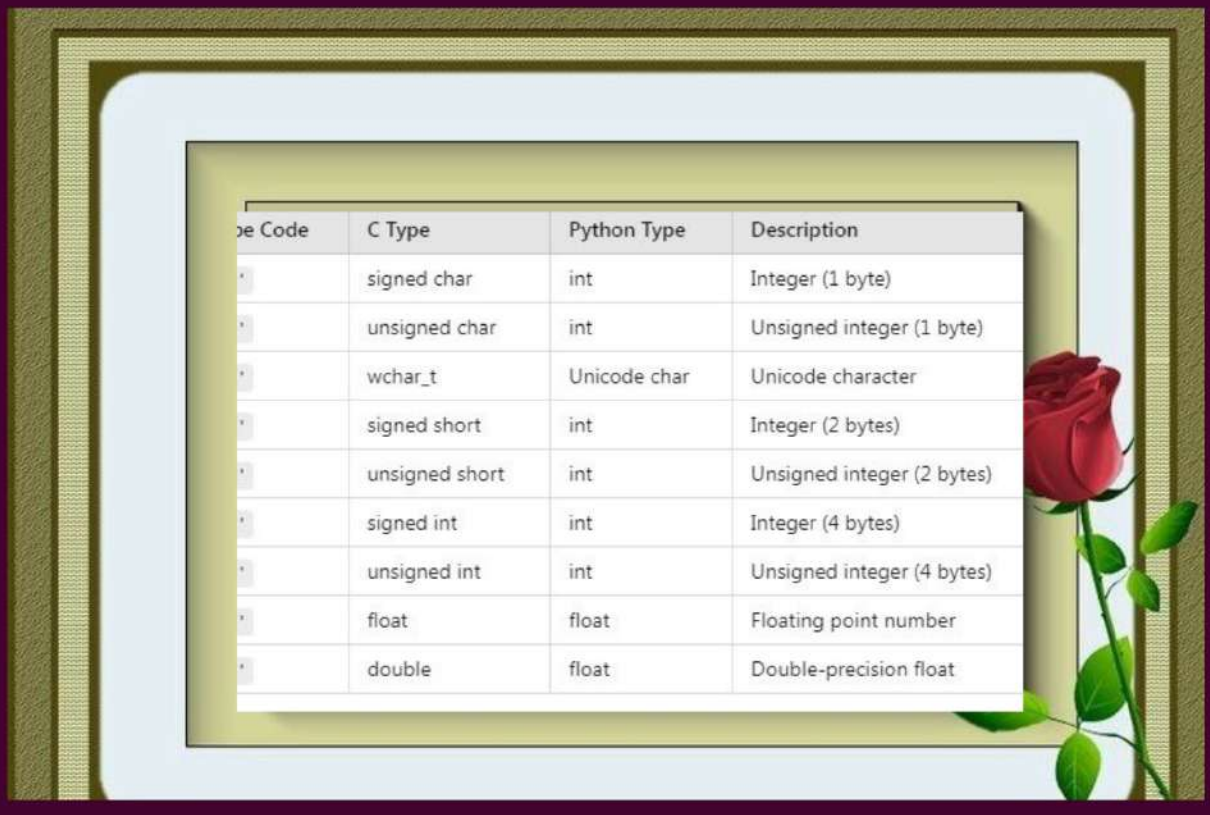
In Python, arrays are data structures used to store multiple values of the same type. Python doesn't have a built-in array data type, but the array module in Python provides a way to use arrays similar to those in other programming languages like C or Java. Additionally, Python lists and NumPy arrays are commonly used for similar purposes.

Creating an Array

```
from array import array

# array(type_code, [elements])
arr = array('i', [1, 2, 3, 4])  # 'i' is the type code for integers
print(arr)  # Output: array('i', [1, 2, 3, 4])
```

Type Codes in Arrays



ɔe Code	C Type	Python Type	Description
'	signed char	int	Integer (1 byte)
'	unsigned char	int	Unsigned integer (1 byte)
'	wchar_t	Unicode char	Unicode character
'	signed short	int	Integer (2 bytes)
'	unsigned short	int	Unsigned integer (2 bytes)
'	signed int	int	Integer (4 bytes)
'	unsigned int	int	Unsigned integer (4 bytes)
'	float	float	Floating point number
'	double	float	Double-precision float

Accessing Elements

```
from array import array
arr = array('i', [10, 20, 30, 40])

# Access by index
print(arr[0])  # Output: 10
print(arr[-1])  # Output: 40
```

Modifying Elements

```
arr[1] = 25
print(arr)  # Output: array('i', [10, 25, 30, 40])
```

Appending and Extending

- **append(value): Adds a single value to the end of the array.**
- **extend(iterable): Adds multiple values from an iterable to the array.**

```
arr.append(50)

print(arr)  # Output: array('i', [10, 25, 30, 40, 50])


arr.extend([60, 70])

print(arr)  # Output: array('i', [10, 25, 30, 40, 50, 60, 70])
```

Inserting Elements

insert(index, value): Inserts a value at a specific index.

arr.insert(2, 15)
print(arr) # Output: array('i', [10, 25, 15, 30, 40, 50, 60, 70])

Removing Elements

remove(value): Removes the first occurrence of the specified value.

arr.remove(30) print(arr) # Output: array('i', [10, 25, 40, 50, 60, 70])

Reversing and Sorting

- reverse(): Reverses the array.
- sort(): Sorts the array (only for lists).

```
arr.reverse()
print(arr)  # Output: array('i', [70, 60, 50, 40, 25, 10])
```

Using a Python List as an Array

```
# Ask the user for the number of elements
n = int(input("Enter the number of elements in the list: "))

# Initialize an empty list
user_list = []

# Loop to take input for the list
for i in range(n):
element = int(input(f"Enter element {i + 1}: "))
user_list.append(element)

# Display the list
print("The user-defined list is:", user_list)
```

```
Enter the number of elements in the array: 4
Enter element 1: 10
Enter element 2: 20
Enter element 3: 30
Enter element 4: 40
```

Using a Python List as an Array SUM

```
# Ask the user for the number of elements
n = int(input("Enter the number of elements in the list: "))

# Initialize an empty list
user_list = []

# Loop to take input for the list
for i in range(n):
element = int(input(f"Enter element {i + 1}: "))
user_list.append(element)
t=sum(userlist)

# Display the list
print("The user-defined list is:", user_list)
print(“sum of number:”,t)
```

```
Enter the number of elements in the array: 4
Enter element 1: 10
Enter element 2: 20
Enter element 3: 30
Enter element 4: 40
sum of number:100
```

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