

Experiment 2

Aim: Implement basic Python programs for reading input from the console.

Theory:

Type Conversion:

- Type Conversion is the process of converting a data type into another data type.
- There can be two types of Conversion:

A] Implicit Type conversion

- It is **performed by Python interpreter only**.
- Interpreter **automatically converts one data type to another data type without any user involvement**.
- **Type promotion** that allows performing operations by **converting data into a wider-sized data type without any loss of information**.

B] Explicit Type conversion

- It is **performed manually by the user by using the type conversion functions**.
- This Explicit Type Conversion is known as **Type Casting**.
- In Type Casting, loss of data may occur as we enforce the object to a specific data type.

Accepting Input from Console

- To take input from the user we make use of a built-in function *input()*
- ✓ **Syntax:** input([prompt])
- ✓ **prompt:** is an optional string argument, used to display a message for the user.
- **The default datatype of the values received from the input function is String.**

Accept an integer input from the user

- The user can convert the input data from one type to other data type using type conversion functions.
- This process is termed as **Explicit Type-Conversion** or **Type Casting**.

User Input Exception Handling

- If we use a input(), the input will be a string, which we have to cast into an integer. If the input isn't a valid integer, we will generate (raise) a ValueError.
- With the aid of exception handling, this can be neglected using try and except clauses.

Multiple input values in a single line

- To read multiple values directly on a single line with only one call to the input() function.
- This can be done by using split() which separates the input string by spaces.

Program:

#Read the user input:

```
a=input()
```

```
print(a)
```

#Read the user input with prompt:

```
a = input('Enter some value: ')
```

```
print(a)
```

#Check the default data type of input from console is String:

```
name = input("Enter name: ")
```

```
age = input("Enter age: ")
```

```
print("Data type of name: ", type(name))
```

```
print("Data type of age: ", type(age))
```

#Implicit Type Conversion

```
x = 123
```

```
y = 1.23
```

```
z = x + y
```

```
print("Datatype of x:", type(x))
```

```
print("Datatype of y:", type(y))
```

```
print("Value of z:", z)
```

```
print("Datatype of z:", type(z))
```

#Explicit Type Conversion:

#Print sum of two numbers taken from the user

```
num_1 = int(input("Enter first num: "))
```

```
num_2 = int(input("Enter second num: "))
```

```
print('Data Type of num_1:', type(num_1))
```

```
print('Data Type of num_2:', type(num_2))
```

```
result = num_1 + num_2
```

```
print("The sum of given numbers is : ", result)
```

#Input Exception Handling

try:

```
num = int(input('Enter a number: '))  
print('The entered number is: ', num)
```

except ValueError:

```
print('This is not a number.')
```

Multiple input values in a single line

```
name, age, score = input("Enter student's name, age and score:").split()  
print("Student Name:", name)  
print("Student Age:", age)  
print("Student Score:", score)
```

Conclusion:

Hence the implementation of type conversion, type casting and reading input from console using input() is done.

Output

#Check the default data type of input from console is String:

```
Enter name: Student
Enter age: 20
Data_type of name: <class 'str'>
Data_type of age: <class 'str'>
```

#Implicit Type Conversion

```
Datatype of x: <class 'int'>
Datatype of y: <class 'float'>
Value of z: 124.23
Datatype of z: <class 'float'>
```

#Explicit Type Conversion:

```
Enter first num: 10
Enter second num: 5
Data Type of num_1: <class 'int'>
Data Type of num_2: <class 'int'>
The sum of given numbers is : 15
```

#Input Exception Handling

```
Enter a number: abcd
This is not a number.
```

Multiple input values in a single line

```
Enter student's name, age and score: Alice 20 100
Student Name: Alice
Student Age: 20
Student Score: 100
```