	SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGG.		LABORATORY MANUAL	
	PRACTICAL EXPERIMENT INSTRUCTION SHEET			
	EXPERIMENT TITLE : Write python program to store data in list and then try to print them.			
EXPERIMENT NO. : SSGMCE/WI/IT/01/3IT09/01			ISSUE NO. : 00	ISSUE DATE : 30.07.2023
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1.0) AIM: Write python program to store data in list and then try to print them.

2.0) SCOPE: This Python program aims to teach students the concept of data storage using lists. It enables users to input data, which is then stored in a list for later retrieval and display.

3.0) FACILITIES/ APPARATUS:

1. Python development environment (e.g., IDLE)
2. Input mechanism (keyboard)
3. Computer with Python installed

4.0) THEORY:

4.1) Introduction about List Data Structure

A list in Python is a versatile and ordered collection of items, where each item can be of any data type. Lists are one of the most commonly used data structures in programming, and they provide a way to store multiple values in a single variable.

Example: Let's say you want to store a list of integers representing temperatures. Here's how you can create a list and store data in it:

```
# Creating a list of temperatures
temperatures = [25, 28, 30, 27, 22]

# Printing the list
print("Temperatures:", temperatures)
```

In this example:

- We create a list named **temperatures** using square brackets [].
- Inside the brackets, we list the integer values representing different temperatures.
- The **print()** function is used to display the entire list.

Output:

```
Temperatures: [25, 28, 30, 27, 22]
```

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Lists can store values of different data types, including numbers, strings, booleans, and even other lists. You can modify lists by adding, removing, or changing elements. Lists are mutable, which means you can modify their content after they are created.

Storing Data in a List:

1. Create an empty list using square brackets [].

```
my_list = []
```

2. Use the append() method to add elements to the end of the list

```
my_list.append(10)
my_list.append("Hello")
my_list.append(True)
```

3. You can also directly assign a list to a variable.

```
fruits = ["apple", "banana", "orange"]
```

4. Access elements in a list using indexing. Indexing starts from 0.

```
first_fruit = fruits[0] # Accessing the first element ("apple")
```

5. Modify elements in a list by assigning a new value using indexing.


```
fruits[1] = "grape" # Changing the second element to "grape"
```

6. Lists can contain elements of different data types.

```
mixed_list = [10, "Hello", 3.14, True]
```

7. Use list slicing to create sub-lists.

```
sub_list = fruits[1:3] # Creates a sub-list ["grape", "orange"]
```

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Lists are powerful and flexible data structures that enable you to work with collections of data efficiently and effectively. They are a fundamental concept in Python and widely used in various programming tasks.

The program demonstrates the list data structure in Python through the following steps:

1. It initializes an empty list named **data_list**.
2. Users are prompted to input the number of elements they wish to store.
3. A **for** loop iterates over the range of the entered number, asking users for each element.
4. The **append** function is used to add user input to the **data_list**.
5. Another loop then prints each element from the list.

4.2) PROGRAM EXPLANATION:

1. The program starts by defining an empty list, **data_list**.
2. It prompts the user to specify the number of elements they want to input.
3. A **for** loop iterates for the entered number, asking users to input each element.
4. The **append** function adds the user's input to **data_list**.
5. A loop is used again to iterate over **data_list** and print each element.

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```
# Create an empty list
data_list = []

# Prompt the user for input and store in the list
num_elements = int(input("Enter the number of elements: "))
for i in range(num_elements):
    data = input(f"Enter element {i + 1}: ")
    data_list.append(data)

# Print the elements stored in the list
print("Elements in the list:")
for element in data_list:
    print(element)
```

5.0) Conclusion:

This hands-on exercise teaches students how to manage data using lists in Python. They learn the process of collecting and displaying user inputs, using loops for efficient processing, and understanding the basics of data structures. This experiment fosters practical programming skills and enhances students' comprehension of fundamental programming concepts.