**Academic Year: 2024-2025**
**Semester: V**
**Class / Branch: TE/CSE-DS**
**Subject**: **Artificial Intelligence Lab**
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**Date Of Performance:24/09/24**
**Date Of Submission:24/09/24**

## Experiment No.06

**Aim:**-To perform local search techniques using Hill Climbing Algorithm in python.

### CODE of simple hill climbing:

```
def simple_hill_climbing(numbers):
current_index = 0
while True:
if current_index +1< len(numbers):
if numbers[current_index] < numbers[current_index +1]:

current_index+=1
else:
return numbers[current_index]
else:
return numbers[current_index]

numbers = [1,3,7,12,9,15]
max_number = simple_hill_climbing(numbers)
print(f"The maximum number in the list is : {max_number}")
```

### output:

```
the maximum number in the list is: 12
```

### CODE of Steepest-Ascent Hill Climbing:

```
def steepest_ascent_hill_climbing(numbers):
current_max = numbers[0]
for num in numbers:
if num>current_max:
current_max = num
return current_max
```

```
numbers = [1,3,7,12,9,15]
max_no = steepest_ascent_hill_climbing(numbers)
print(f"The maximum number in the list is : {max_no}")
```

**output:**

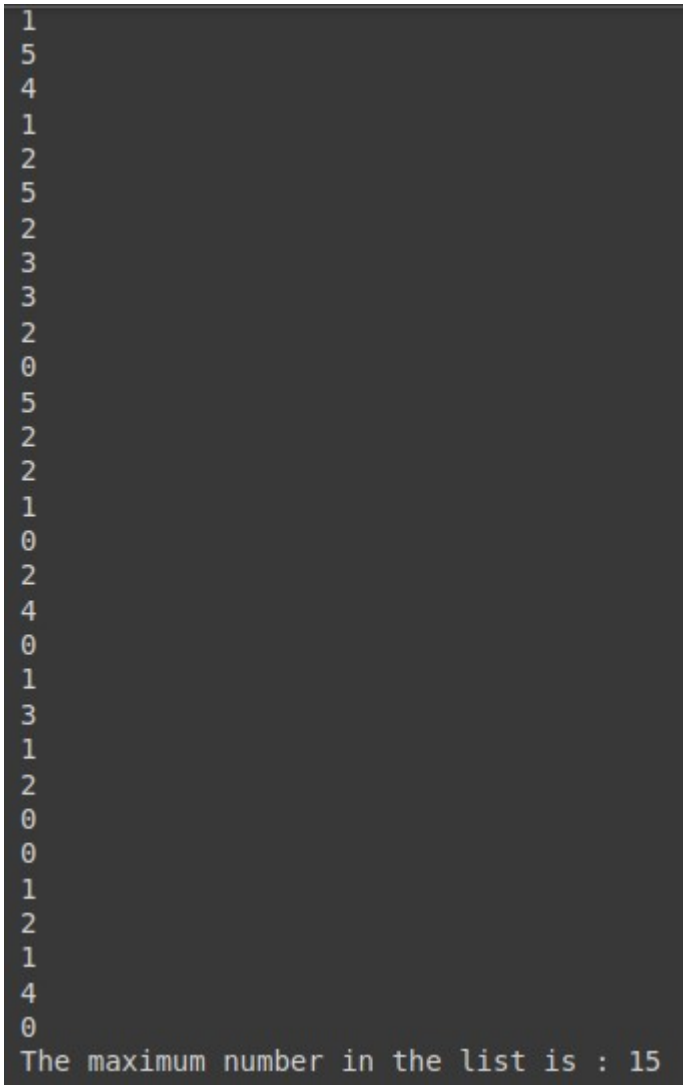
```
The maximum number in the list is : 15
```

## CODE of Stochastic Hill Climbing:

```
import random
def stochastic_hill_climbing(numbers):
current_index = random.randint(0,len(numbers)-1)
current_max=numbers[current_index]
iteration = 100
for _ in range (iteration):
next_index = random.randint(0, len(numbers)-1)
print(next_index)
if numbers[next_index]> current_max:
current_max = numbers[next_index]
print("cm",current_index)
return current_max

numbers = [1,3,7,12,9,15]
max_no = stochastic_hill_climbing(numbers)
print(f"The maximum number in the list is : {max_no}")
```

**output:**




Conclusion:Thus we have performed local search using Hill Climbing Algorithm in python.