ASSINGMENT NO 4

Problem statement : Write a Python program to store the first-year percentage scores of students in an array. Implement functions to sort the array of floating-point numbers in ascending order using: (don't use inbuild functions)

1. Selection Sort

2. Bubble Sort

After sorting, display the top five highest scores from the array.

CODE:

def selection\_sort(scores):

n = len(scores)

for i in range(n):

min\_index = i

for j in range(i + 1, n):

if scores[j] < scores[min\_index]:

min\_index = j

scores[i], scores[min\_index] = scores[min\_index], scores[i]

def bubble\_sort(scores):

n = len(scores)

for i in range(n):

for j in range(0, n - i - 1):

if scores[j] > scores[j + 1]:

scores[j], scores[j + 1] = scores[j + 1], scores[j]

def display\_top\_scores(scores):

top\_scores = scores[-5:] if len(scores) >= 5 else scores

print("Top five highest scores:")

for score in reversed(top\_scores):

print(score)

def main():

N = int(input("Enter the number of students: "))

scores = []

print("Enter the percentage scores:")

for \_ in range(N):

score = float(input())

scores.append(score)

print("\nScores before sorting:")

print(scores)

# Selection Sort

selection\_sort(scores)

print("\nScores after Selection Sort:")

print(scores)

display\_top\_scores(scores)

# Reset scores for Bubble Sort

scores = [float(input(f"Enter percentage score for student {\_ + 1}: ")) for \_ in range(N)]

print("\nScores before Bubble Sort:")

print(scores)

# Bubble Sort

bubble\_sort(scores)

print("\nScores after Bubble Sort:")

print(scores)

display\_top\_scores(scores)

if \_\_name\_\_ == "\_\_main\_\_":

main()

OUTPUT:

Enter the number of students: 6

Enter the percentage scores:

76

85

92

65

88

70

Scores before sorting:

[76.0, 85.0, 92.0, 65.0, 88.0, 70.0]

Scores after Selection Sort:

[65.0, 70.0, 76.0, 85.0, 88.0, 92.0]

Top five highest scores:

88.0

92.0

Enter percentage score for student 1: 76

Enter percentage score for student 2: 85

Enter percentage score for student 3: 92

Enter percentage score for student 4: 65

Enter percentage score for student 5: 88

Enter percentage score for student 6: 70

Scores before Bubble Sort:

[76.0, 85.0, 92.0, 65.0, 88.0, 70.0]

Scores after Bubble Sort:

[65.0, 70.0, 76.0, 85.0, 88.0, 92.0]

Top five highest scores:

88.0

92.0