Open | test13.py ~/Documents/FDS | Save

```python
# Accepting Roll Numbers of the Students

def accept_roll():
    roll_no = []
    no_of_students = int(input("Enter the number of students  : "))
    for i in range(no_of_students):
        roll_no.append(int(input("Enter Roll Number of Student {0} : ".format(i+1))))
    return roll_no


# Printing the Roll Numbers of the Students

def print_roll(roll_no):
    for i in range(len(roll_no)):
        print(roll_no[i],sep = "\n")


# Insertion Sort for Sorting the list of Roll Numbers

def insertion_sort(roll_no):
    for i in range(1,len(roll_no)):
        key = roll_no[i]
        j = i-1;
        while j >= 0 and key < roll_no[j]:
            roll_no[j+1] = roll_no[j]
            j -= 1
            roll_no[j+1] = key
    return roll_no


# Function for performing Non-Recursive Ternary Search

def NR_Ternary_Search(roll,roll_find):
    left = 0
    right = len(roll) - 1
    while left <= right:
```

Python 2 | Tab Width: 8 | Ln 127, Col 19 | INS

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```python
    while left <= right:
        mid1 = left + (right - left) // 3
        mid2 = left + 2 * (right - left) // 3
        if roll_find == roll[left]:
            return left
        elif roll_find == roll[right]:
            return right
        elif roll_find < roll[left] or roll_find > roll[right]:
            return -1
        elif roll_find <= roll[mid1]:
            right = mid1
        elif roll_find > roll[mid1] and roll_find <= roll[mid2]:
            left = mid1 + 1
            right = mid2
        else:
            left = mid2 + 1
    return -1


# Function for performing Recursive Ternary Search

def R_Ternary_Search(roll, left, right, roll_find):
    if (right >= left):
        mid1 = left + (right - left) // 3
        mid2 = right - (right - left) // 3
        if (roll[mid1] == roll_find):
            return mid1
        if (roll[mid2] == roll_find):
            return mid2

        if (roll_find < roll[mid1]):
            return R_Ternary_Search(roll, left, mid1 - 1, roll_find)
        elif (roll_find > roll[mid2]):
            return R_Ternary_Search(roll, mid2 + 1, right, roll_find)
        else:
            return R_Ternary_Search(roll, mid1 + 1, mid2 - 1, roll_find)
    return -1

```

Python 2 | Tab Width: 8 | Ln 77, Col 1 | INS

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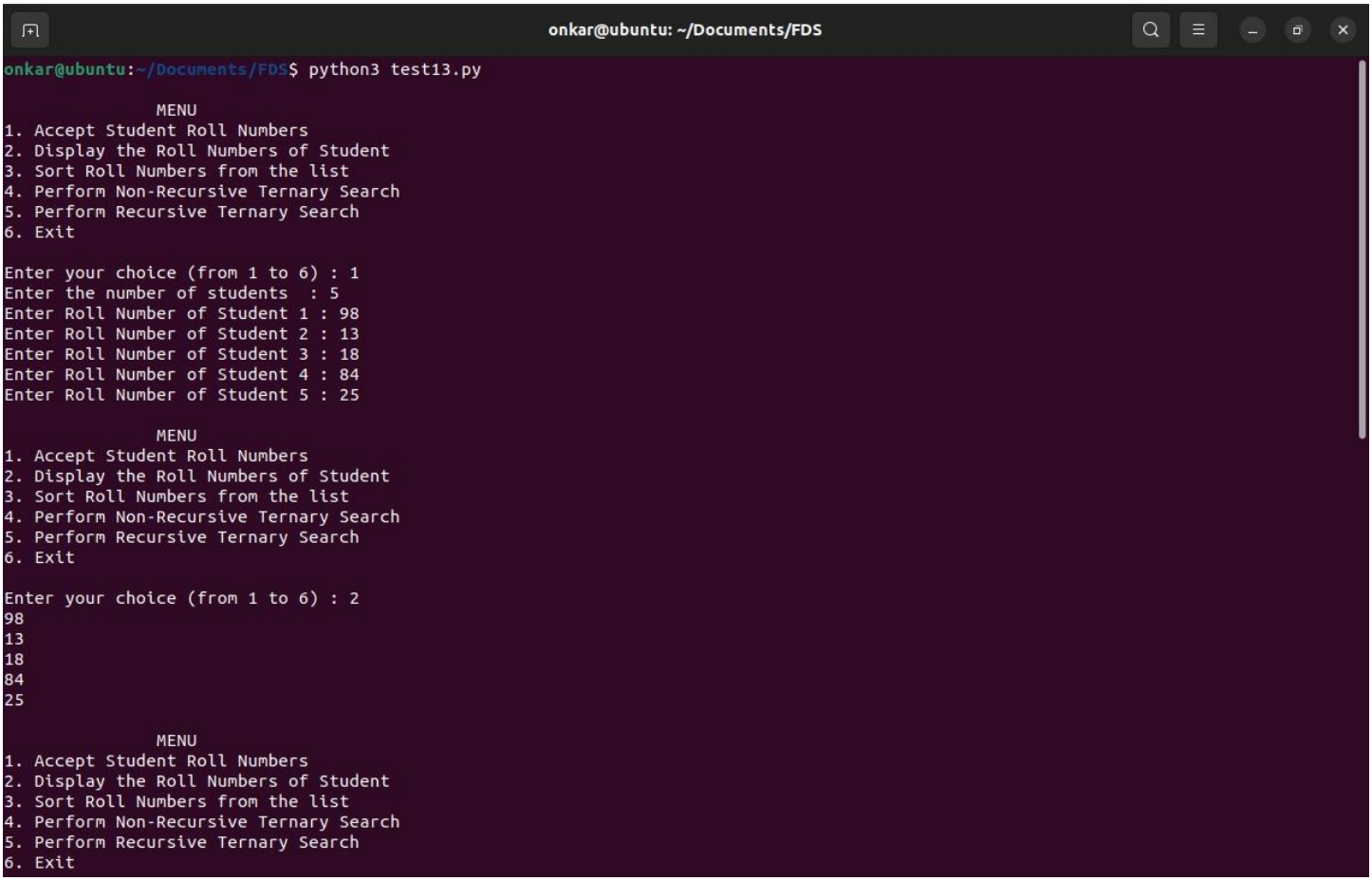
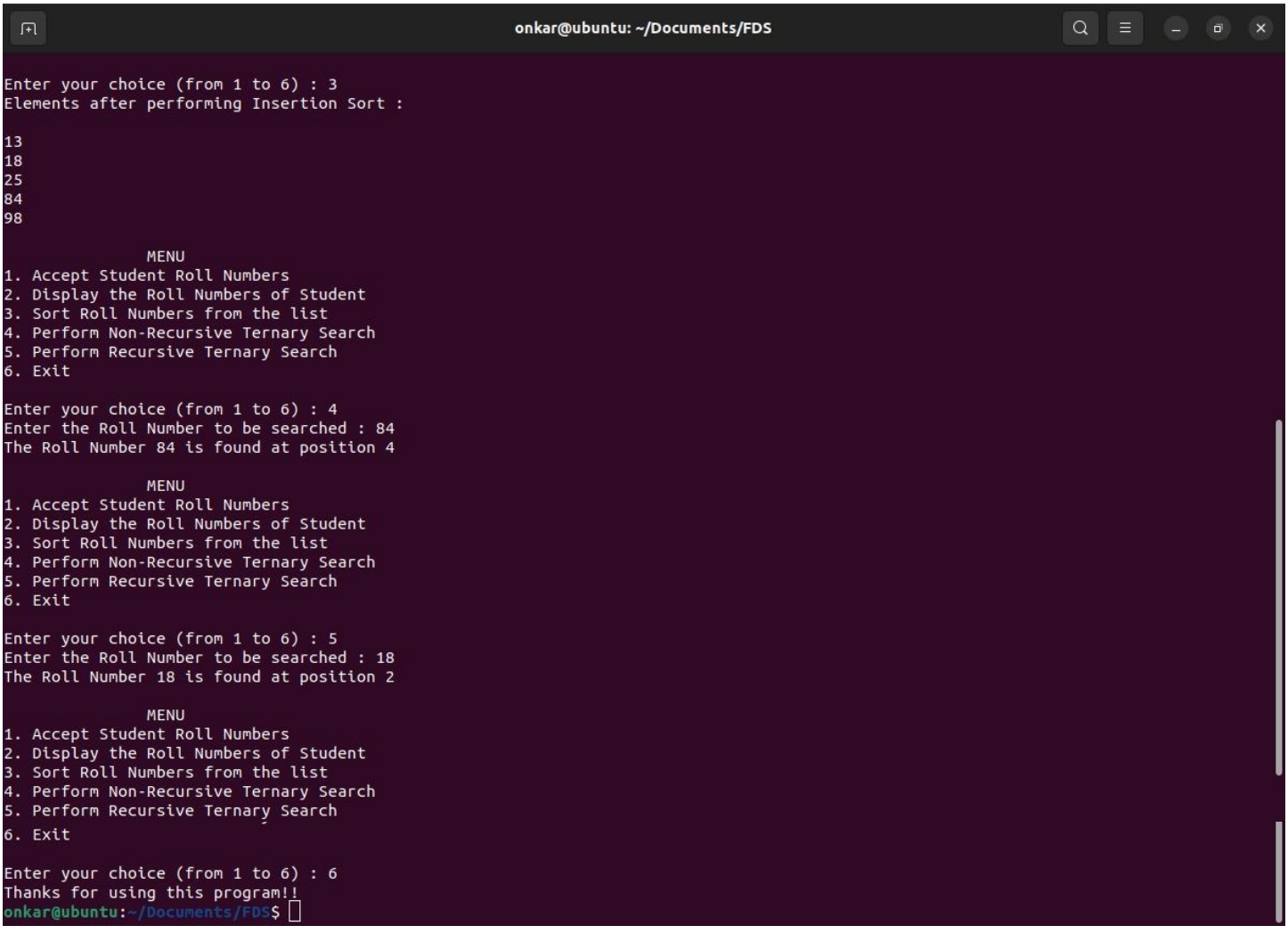
```
# Main
unsort_Roll = []
sort_Roll = []
flag = 1

while flag == 1:
        print("\n\t\t\bMENU")
        print("1. Accept Student Roll Numbers")
        print("2. Display the Roll Numbers of Student")
        print("3. Sort Roll Numbers from the list")
        print("4. Perform Non-Recursive Ternary Search")
        print("5. Perform Recursive Ternary Search")
        print("6. Exit\n")

        ch = int(input("Enter your choice (from 1 to 6) : "))

        if ch == 1:
             unsort_Roll = accept_roll()

        elif ch == 2:
            print_roll(unsort_Roll)

        elif ch == 3:
            print("Elements after performing Insertion Sort : \n")
            sort_Roll = insertion_sort(unsort_Roll)
            print_roll(sort_Roll)

        elif ch == 4:
            find_roll = int(input("Enter the Roll Number to be searched : "))
            index = NR_Ternary_Search(sort_Roll,find_roll)
            if index != -1:
                 print("The Roll Number",find_roll,"is found at position",index+1)
            else:
                 print("Roll Number",find_roll,"nor found!!")

        elif ch == 5:
            find_roll = int(input("Enter the Roll Number to be searched : "))
            left = 0
            right = len(sort_Roll) - 1
            index = R_Ternary_Search(sort_Roll,left,right,find_roll)
            if index != -1:
                print("The Roll Number",find_roll,"is found at position",index+1)
            else:
                print("Roll Number",find_roll,"nor found!!")

        elif ch == 6:
            print("Thanks for using this program!!")
            flag=0

        else:
            print("Wrong choice!!")
            flag = 0
```

Python 2 | Tab Width: 8 | Ln 118, Col 2 | INS


onkar@ubuntu: ~/Documents/FDS
onkar@ubuntu:~/Documents/FDS$ python3 test13.py
MENU
1. Accept Student Roll Numbers
2. Display the Roll Numbers of Student
3. Sort Roll Numbers from the list
4. Perform Non-Recursive Ternary Search
5. Perform Recursive Ternary Search
6. Exit
Enter your choice (from 1 to 6) : 1
Enter the number of students : 5
Enter Roll Number of Student 1 : 98
Enter Roll Number of Student 2 : 13
Enter Roll Number of Student 3 : 18
Enter Roll Number of Student 4 : 84
Enter Roll Number of Student 5 : 25
MENU
1. Accept Student Roll Numbers
2. Display the Roll Numbers of Student
3. Sort Roll Numbers from the list
4. Perform Non-Recursive Ternary Search
5. Perform Recursive Ternary Search
6. Exit
Enter your choice (from 1 to 6) : 2
98
13
18
84
25
MENU
1. Accept Student Roll Numbers
2. Display the Roll Numbers of Student
3. Sort Roll Numbers from the list
4. Perform Non-Recursive Ternary Search
5. Perform Recursive Ternary Search
6. Exit


onkar@ubuntu: ~/Documents/FDS
Enter your choice (from 1 to 6) : 3
Elements after performing Insertion Sort :
13
18
25
84
98
MENU
1. Accept Student Roll Numbers
2. Display the Roll Numbers of Student
3. Sort Roll Numbers from the list
4. Perform Non-Recursive Ternary Search
5. Perform Recursive Ternary Search
6. Exit
Enter your choice (from 1 to 6) : 4
Enter the Roll Number to be searched : 84
The Roll Number 84 is found at position 4
MENU
1. Accept Student Roll Numbers
2. Display the Roll Numbers of Student
3. Sort Roll Numbers from the list
4. Perform Non-Recursive Ternary Search
5. Perform Recursive Ternary Search
6. Exit
Enter your choice (from 1 to 6) : 5
Enter the Roll Number to be searched : 18
The Roll Number 18 is found at position 2
MENU
1. Accept Student Roll Numbers
2. Display the Roll Numbers of Student
3. Sort Roll Numbers from the list
4. Perform Non-Recursive Ternary Search
5. Perform Recursive Ternary Search
6. Exit
Enter your choice (from 1 to 6) : 6
Thanks for using this program!!
onkar@ubuntu:~/Documents/FDS$