

EXPERIMENT N0-3

AIM: Write a menu driven python program to implement the following. Find the longest word in a list of words Check if each element in the input list is at least as big as the one before it. Reverse a list using recursion. Find transpose of a given matrix using list comprehension.

CODE:

```
def listsort():
```

```
    l=[]
```

```
    n=int(input("enter the number of elements in list: "))
```

```
    for i in range(0,n):
```

```
        a=int(input(f"enter the value: "))
```

```
        l.append(a)
```

```
    x=l[:]
```

```
    x.sort()
```

```
    if(l==x):
```

```
        print("list is sorted")
```

```
    else:
```

```
        print("list is not sorted")
```

```
def longestLength(a):
```

```
    max1 = len(a[0])
```

```
    temp = a[0]
```

```
    for i in a:
```

```
        if (len(i) > max1):
```

```
            max1 = len(i)
```

```
            temp = i
```

```

    print("The word with the longest length is:", temp, " and length is ", max1)
def reverse_list(NumList, num):
    j = n - 1
    i = 0
    while (i < j):
        temp = NumList[i]
        NumList[i] = NumList[j]
        NumList[j] = temp
        i = i + 1
        j = j - 1
def transpose():
    r=int(input("ENTER THE NUMBER OF ROWS: "))
    c=r=int(input("ENTER THE NUMBER OF COLUMNS: "))
    m=[[int(input("Enter the no:"+str(i)+" "+str(j)+":")) for j in range (c)] for i in
range (r)]
    print("original matrix is:")
    for k in m:
        print(k)
    rez = [[m[j][i] for j in range(c)] for i in range(r)]
    print("transpose of matrix is:")
    for row in rez:
        print(row)

if __name__ == '__main__':
    while(True):
        print("***** MENU *****")
        print("1: LONGEST WORD IN LIST")

```

```

print("2: CHECK LIST IS SORTED OR NOT")
print("3: REVERSE OF THE LIST")
print("4: TRANSPOSE OF MATRIX")
op=int(input("ENTER YOUR CHOICE:"))
if op==1:
    lst = []
    n = int(input("Enter number of elements IN LIST : "))
    for i in range(0, n):
        ele = input("Enter the elements : ")
        lst.append(ele)
    longestLength(lst)
elif op==2:
    listsort()
elif op==3:
    a = []
    n = int(input("Enter total number of list: "))
    for i in range(1, n + 1):
        inp = int(input("Please enter the Value of %d Element : " % i))
        a.append(inp)
    print("Original list is", a)
    reverse_list(a, n)
    print("The Result of a Reverse List = ", a)
elif op==4:
    transpose()
else:
    print("wrong input")
print("Press q to quit and c to continue:",end=" ")

```

```

ch = ""

while (ch!= "c" and ch!= "q"):

    ch = input()

    if ch == "q":

        exit()

    elif ch == "c":

        continue

```

OUTPUT:

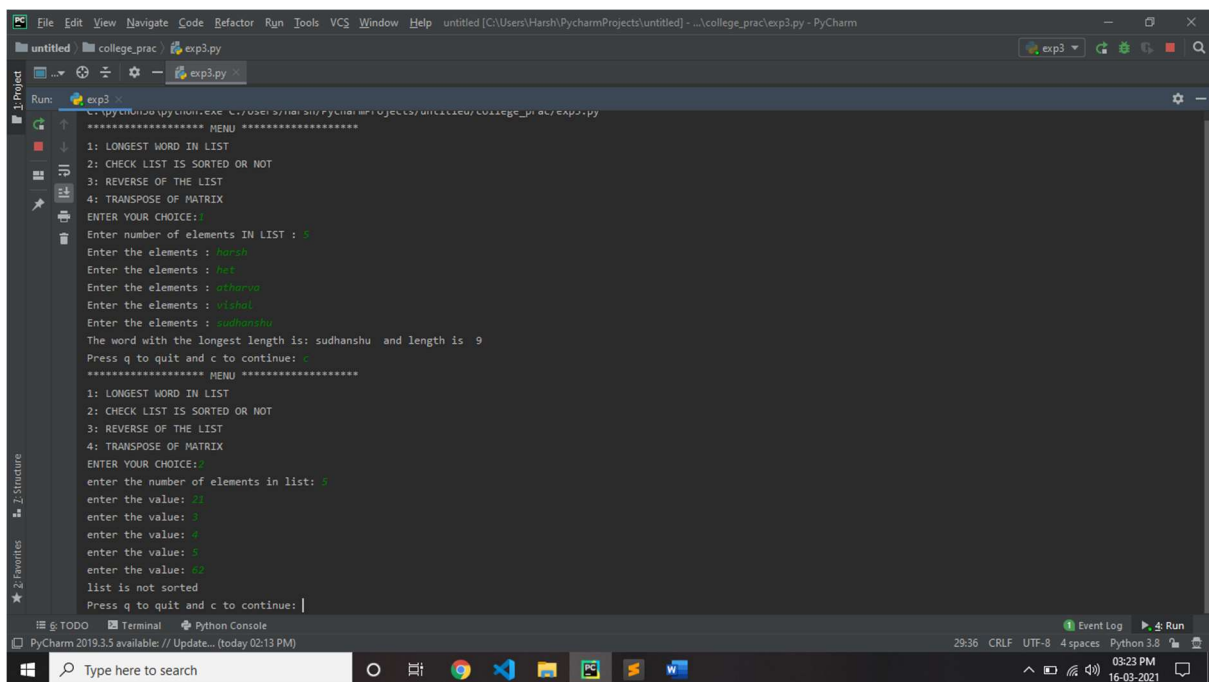
1: LONGEST WORD IN LIST

```

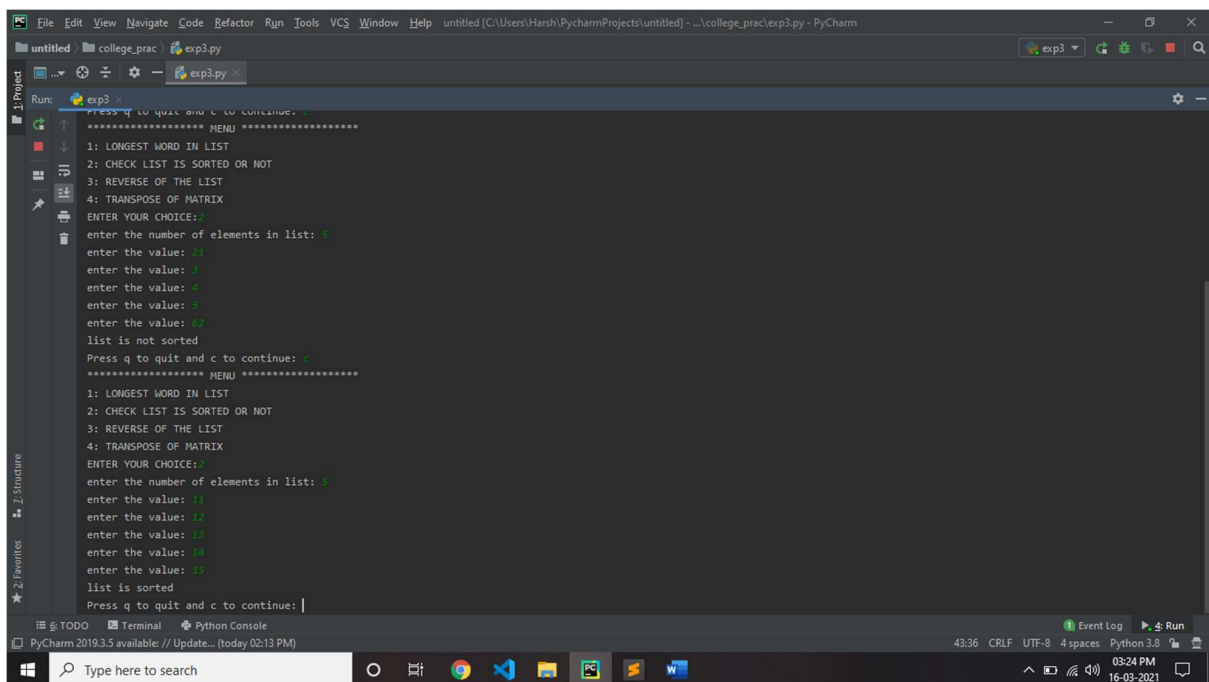
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - college_prac/exp3.py - PyCharm
untitled college_prac exp3.py
Run: exp3.py
C:\python38\python.exe C:/Users/Harsh/PycharmProjects/untitled/college_prac/exp3.py
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE: 1
Enter number of elements IN LIST : 5
Enter the elements : harsh
Enter the elements : hal
Enter the elements : atharva
Enter the elements : vishal
Enter the elements : sudhanshu
The word with the longest length is: sudhanshu and length is 9
Press q to quit and c to continue: |

```

2: CHECK LIST IS SORTED OR NOT

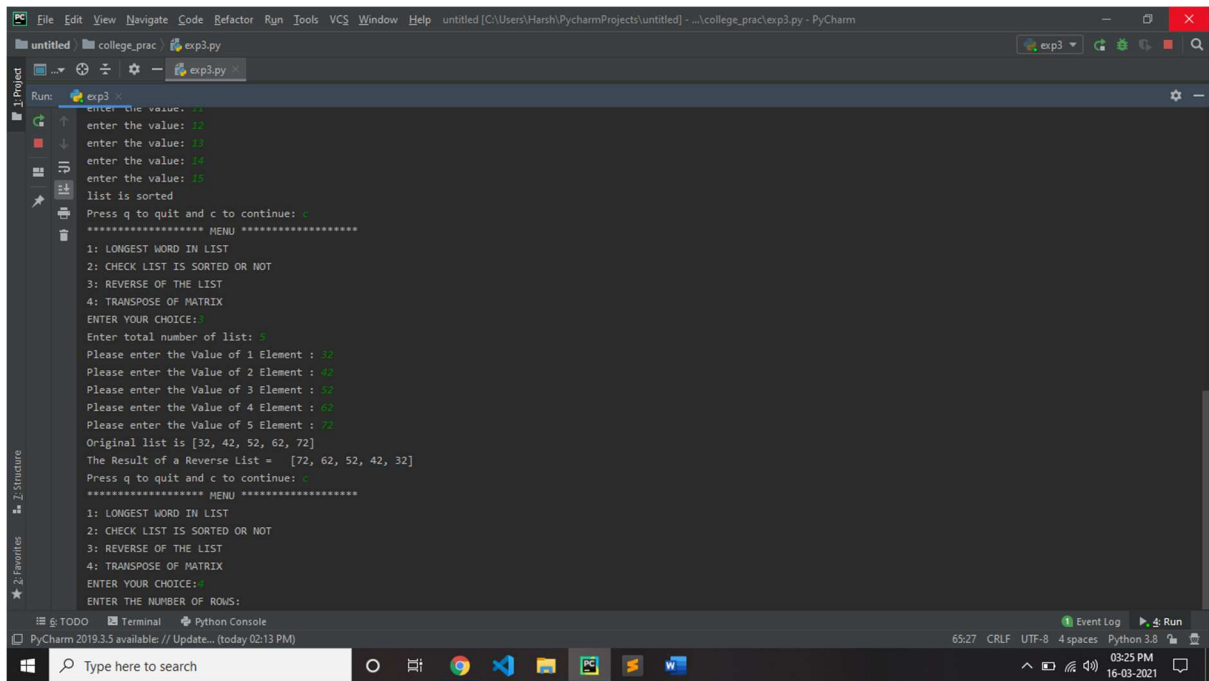


```
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - ...college_prac\exp3.py - PyCharm
untitled college_prac exp3.py
Run: exp3.py
C:\python38\python.exe C:/Users/Harsh/PycharmProjects/untitledview/college_prac/exp3.py
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE:1
Enter number of elements IN LIST : 5
Enter the elements : harsh
Enter the elements : het
Enter the elements : atharva
Enter the elements : vishal
Enter the elements : sudhanshu
The word with the longest length is: sudhanshu and length is 9
Press q to quit and c to continue:
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE:2
enter the number of elements in list: 5
enter the value: 23
enter the value: 3
enter the value: 4
enter the value: 5
enter the value: 62
list is not sorted
Press q to quit and c to continue: |
PyCharm 2019.3.5 available // Update... (today 02:13 PM)
29:36 CRLF UTF-8 4 spaces Python 3.8
03:23 PM 16-03-2021
```



```
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - ...college_prac\exp3.py - PyCharm
untitled college_prac exp3.py
Run: exp3.py
Press q to quit and c to continue:
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE:2
enter the number of elements in list: 5
enter the value: 23
enter the value: 3
enter the value: 4
enter the value: 5
enter the value: 62
list is not sorted
Press q to quit and c to continue: c
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE:2
enter the number of elements in list: 5
enter the value: 11
enter the value: 12
enter the value: 13
enter the value: 14
enter the value: 15
list is sorted
Press q to quit and c to continue: |
PyCharm 2019.3.5 available // Update... (today 02:13 PM)
43:36 CRLF UTF-8 4 spaces Python 3.8
03:24 PM 16-03-2021
```

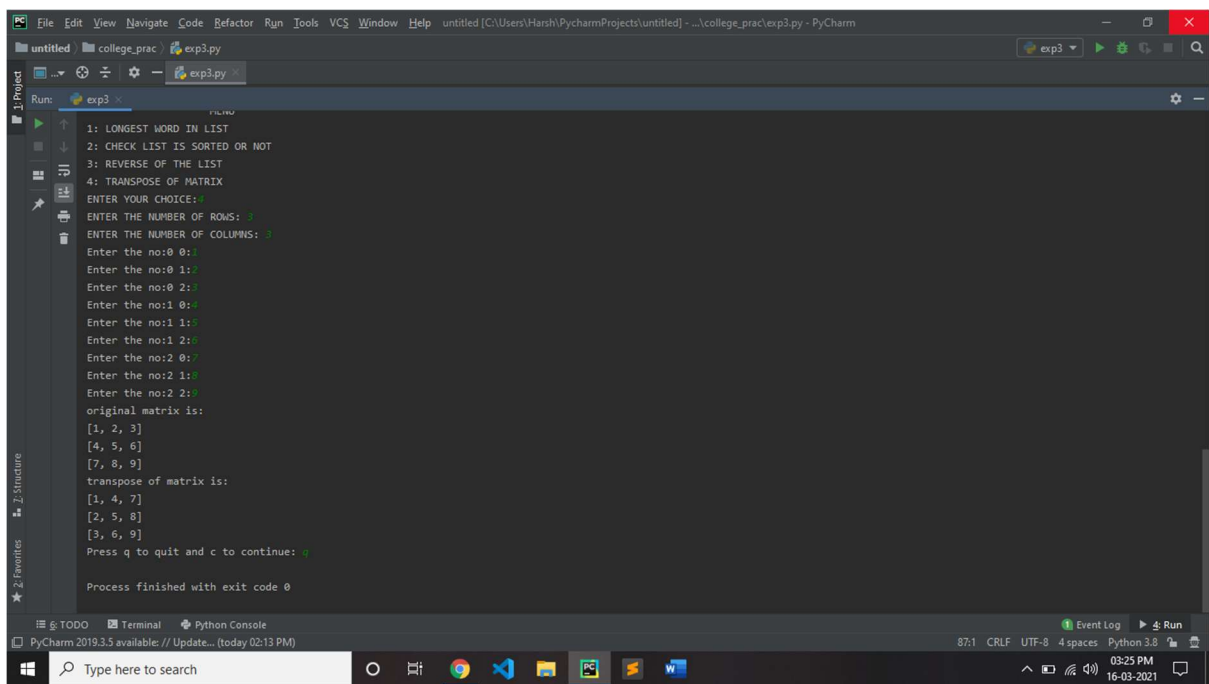
3: REVERSE OF THE LIST



The screenshot shows the PyCharm IDE with a file named `exp3.py` open. The Run console displays the following output:

```
enter the value: 32
enter the value: 42
enter the value: 52
enter the value: 62
enter the value: 72
list is sorted
Press q to quit and c to continue: c
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE: 3
Enter total number of list: 5
Please enter the Value of 1 Element : 32
Please enter the Value of 2 Element : 42
Please enter the Value of 3 Element : 52
Please enter the Value of 4 Element : 62
Please enter the Value of 5 Element : 72
Original list is [32, 42, 52, 62, 72]
The Result of a Reverse List = [72, 62, 52, 42, 32]
Press q to quit and c to continue: c
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE: 4
ENTER THE NUMBER OF ROWS:
```

4: TRANSPOSE OF MATRIX



The screenshot shows the PyCharm IDE with a file named `exp3.py` open. The Run console displays the following output:

```
***** MENU *****
1: LONGEST WORD IN LIST
2: CHECK LIST IS SORTED OR NOT
3: REVERSE OF THE LIST
4: TRANSPOSE OF MATRIX
ENTER YOUR CHOICE: 4
ENTER THE NUMBER OF ROWS: 3
ENTER THE NUMBER OF COLUMNS: 3
Enter the no:0 0: 1
Enter the no:0 1: 2
Enter the no:0 2: 3
Enter the no:1 0: 4
Enter the no:1 1: 5
Enter the no:1 2: 6
Enter the no:2 0: 7
Enter the no:2 1: 8
Enter the no:2 2: 9
original matrix is:
[1, 2, 3]
[4, 5, 6]
[7, 8, 9]
transpose of matrix is:
[1, 4, 7]
[2, 5, 8]
[3, 6, 9]
Press q to quit and c to continue: q
Process finished with exit code 0
```