

a]

Enter a number : 6

factorial of 6 is 720

running time is : 0.004679

b]

odd no. count : 5

even no. count : 5

Aim: Analysing rate of growth of algorithm and case analysis

- a) Write a program to print factorial of a number

```
import timeit
result = 1
i = 1
a = int(input("Enter a number:"))
while i <= a:
    result *= i
    i += 1
print("Factorial of", a, "is", result)
print("Running time is:", timeit.timeit())
```

- b) Write a program to print odd and even count from an array

```
a = [1, -3, 89, -6, -8, 3, 44, 5, 66, -90]
```

```
even_value = 0
```

```
odd_value = 0
```

```
for i in a:
```

```
    if i % 2 == 0:
```

```
        even_value += 1
```

```
    else:
```

```
        odd_value += 1
```

```
print("odd no. count:", odd_value)
```

```
print("even no. count:", even_value)
```

3> 6

The maximum value is : 89

The minimum value is : -69

running time : 0.0016653

3> 67

The maximum value is : 89

The running time is : 0.013385

The minimum value is : -67

The running time is : 0.0114377

c] Handling 1D array

- 1) finding maximum and minimum element into an array
 a) import timeit

method1 : By using built-in method max & min

$x = [1, -9, -7, 6, 8, 44, -56, -67, 89]$

print ("the maximum value is:", max(x))

print ("the minimum value is:", min(x))

print ("running time:", timeit.timeit())

b) import timeit

method2

$x = [1, -9, -7, 6, 8, 44, -56, -67, 89]$

maximum = x[0]

i = 1

while i < len(x):

if x[i] > maximum:

maximum = x[i]

i += 1

print ("the maximum value is:", maximum)

print ("the running time is:", timeit.timeit())

minimum = x[0]

i = 1

while i < len(x):

if x[i] < minimum:

minimum = x[i]

i += 1

print ("the minimum value is:", minimum)

print ("the running time is:", timeit.timeit())

2) a]

enter search element: 66

66 is present

running time: 0.01322

b]

enter search element: 66

66 is present

running time: 0.0145011

2) Searching an element in an array

a) import timeit

method 1

a = [66, 123, 0, -45, 53, 111]

found = False

search = int(input("Enter search element:"))

for data in a or not found:

if data == search:

found = True

break

if found == True:

print(search, "is present")

else:

print(search, "is not present")

print("running time:", timeit.timeit())

b) ## method 2

a = [66, 123, 0, -45, 53, 111]

Search = int(input("Enter search element:"))

x = a.count(search)

if x == 0:

print(search, "is not present")

else:

print(search, "is present")

print("running time:", timeit.timeit())

c]

enter search element : 66
search is successful
running time: 0.01476105

c) # method 3

```
import timeit
```

```
a = [66, 123, 0, -45, 53, 111]
```

```
search = int(input("enter search value:"))
```

```
x = len(a)
```

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

```
    if a[i] == search:
```

```
        print("search is successful")
```

```
print("running time:", timeit.timeit())
```