Level-1-programs

①
```
nums = []
print("Enter -1 to exit, enter the numbers:")
while true:
    n = int(input())
    if n == -1
        break
    nums.append(n)
pos = [x for x in nums if x>=0]
neg = [x for x in nums if x<0]
if pos:
    print("avg positive number is",
sum(pos) // len(pos))
if neg:
    print("avg negative number is",
sum(neg) // len(neg))
```

Output:

```
avg negative number is -5
avg positive number is 8
```

② Square and cube of a Decimal

```
num = float(input("Given number:"))
print("square number:", round(num**2,
3))
print("cube number:", round(num**3,
3))
```

Input: 0.6
square number: 0.36
cube number: 0.216

③ "character triangle" pattern

```
char = input("Enter the character to
be printed:")
rows = int(input("Number of rows:"
))
for i in range(1, rows+1):
    print(char+" ")*i)
```

Input:
Enter the character to be printed: +
Number of rows: 5

(2) square and cube of a Decimal

```
num = float(input("Given number:"))
print("square number:", round(num**2,
3))
Print("cube number:", round(num**3,
3))
```

Input: 0.6
square number: 0.36
cube number: 0.216

(3) "character triangle" pattern

```
char = input("Enter the character to
be printed:")
rows = int(input("number of rows:"
))
for i in range(1, rows+1):
    print(char+" ")*i)
```

Input:
Enter the character to be printed: *
number of rows: 5

out put

```
+
+ +
+ + +
+ + + +
+ + + + +
```

⑨ Multiplication table.

```
A = int(input("A = "))
B = int(input("B = "))
for i in range(1, B+1):
    print(f"{A} x {i} = {A*i}")
```

Input:

A = 7

B = 5

output:

7 * 1 = 7

7 * 2 = 14

7 * 3 = 21

7 * 4 = 28

7 * 5 = 35.

⑤ check if a year is a leap year

```
year = 2000
if (year %4 == 0 and year %100 != 0)
or (year %400 == 0):
    print("Leap year")
else:
    print("Not a leap year")
```

output:

Leap year

⑥ duplicate elements in an array

```
arr = [1, 2, 3, 4, 1]
duplicates = []
for i in arr:
    if arr.count(i) > 1 and i not
in duplicates:
        duplicates.append(i)
print("Duplicate array =", duplicates)
```

output:

Duplicate array = [1]

(7) if a number is positive or negative

```
num = 23
if num > 0:
    print ("positive")
elif num < 0:
    print ("negative")
else:
    print ("zero")
```

output:

positive.

(9)

```
arr = [1, 8, 3, 4, 0]
arr.sort(reverse = True)
print ("Output:", arr)
```

output:

[8, 4, 3, 1, 0]

(10)

```
a = {2, 3, 4, 5}
b = {3, 4, 8, 6}
intersection = list(a & b)
print ("output:", intersection)
```

output:

[3, 4]

(9)

```
import statistics
data = [12, 45, 83, 52, 4]
mean = statistics.mean(data)
median = statistics.median(data)
mode_list = statistics.multimode(data)
mode = mode_list[0]
average = (mean + median + mode) / 3
print("mean: ", mean)
print("median : ", median)
print ("mode : ", mode)
print ("Average of mean, median and mode:", average)
```

Output:

```
Mean : 39.2
Median : 45
mode : 12
Average of mean, median and mode:
32.06666666666667
```