# Lab2

September 16, 2023

[ ]:
```
# Trần Nguyễn Vĩnh Uy - 20IT502
```

[2]:
```
# 2.1
b = int(input("length: "))
h = int(input("height: "))
area = (b*h)/2
print("area of a triangle: ", area)
```

```
length: 4
height: 5
area of a triangle:  10.0
```

[4]:
```
# 2.2
#
import math
lat1 = float(input("Latitude 1: "))
lon1 = float(input("Longitude 1: "))

lat2 = float(input("Latitude 2: "))
lon2 = float(input("Longitude 2: "))

radLat1 = math.radians(lat1)
radLat2 = math.radians(lat2)
radLon = math.radians(lon2-lon1)

distance = math.acos(math.sin(radLat1)*math.sin(radLat2) + math.
 ↪cos(radLat1)*math.cos(radLat2)*math.cos(radLon))*6371.01
print("Distance: ", distance, " KM")
```

```
Latitude 1: 50
Longitude 1: 30
Latitude 2: 60
Longitude 2: 100
Distance:  4375.025636888268  KM
```

[5]:
```
# 2.3
days = int(input("Days: "))
hours = int(input("Hours: "))
minutes = int(input("Minutes: "))
```

```
seconds = int(input("Seconds: "))

totalSeconds = days*24*3600 + hours*3600 + minutes*60 + seconds
print("Total seconds: ", totalSeconds)
```

```
Days: 3
Hours: 3
Minutes: 3
Seconds: 60
Total seconds:  270240
```

[6]:
```
# 2.4
celsius = float(input("Celsius: "))

print("Fahrenheit: ", celsius * (9/5) + 32)
print("Kelvin: ", celsius + 273.15)
```

```
Celsius: 45
Fahrenheit:  113.0
Kelvin:  318.15
```

[15]:
```
# 2.5
color = int(input("Color number: "))

if (color < 380):
    print("None")
elif (color < 450):
    print("Violet")
elif (color < 495):
    print("Blue")
elif (color < 570):
    print("Green")
elif (color < 590):
    print("Yellow")
elif (color < 620):
    print("Orange")
elif (color <= 750):
    print("Red")
else:
    print("None")
```

```
Color number: 900
None
```

[24]:
```
# 2.6
print("Celsius Fahrenheit")
for i in range(0, 101, 10):
    print(i, "\t", i*1.8+32)
```

```
Celsius Fahrenheit
0       32.0
10      50.0
20      68.0
30      86.0
40      104.0
50      122.0
60      140.0
70      158.0
80      176.0
90      194.0
100     212.0
```

[2]:
```python
# 2.7
n = int(input("Height: "))
for i in range(n):
    for j in range(i):
        print(' ', end=' ')
    print('*', end=' ')
    test = n-i
    for j in range(test*2-3):
        print(' ', end=' ')
    if (i != n-1):
        print('*')
    else:
        print()
```

```
Height: 10
*                                   *
  *                               *
    *                           *
      *                       *
        *                   *
          *               *
            *           *
              *       *
                *   *
                  *
```

[9]:
```python
# 2.8
listNum = [1,2,3,4,5,6,7,8,9]
odd, even = 0, 0
for i in listNum:
    if (i%2==0):
        even+=1
    else:
        odd+=1
print("Number of even numbers: ", even)
```

```
print("Number of odd numbers: ", odd)
```

```
Number of even numbers:  4
Number of odd numbers:  5
```

[5]:
```
# 2.9
listNum = [15,26,30,40,55,36,27,81,19]
print("Largest number: ", max(listNum))
```

```
Largest number:  81
```

[11]:
```
# 2.10
L1 = [15,26,30,40,55,36,27,81,19]
L2 = [16,28,31,40,56,36,27,80,29]
myList = list()
for i in L1:
    if i in L2:
        myList.append(i)
print(myList)
```

```
[40, 36, 27]
```

[1]:
```
# 2.11
ch = True
myList = list()
while (ch):
    i = int(input())
    if(i==0):
        ch = False
    else:
        myList.append(i)

myList.reverse()
for i in myList:
    print(i)
```

```
1
2
3
4
5
6
7
8
9
0
9
8
7
```

```
6
5
4
3
2
1
```

[6]:
```python
# 2.12
myDict = {
    "banana": 14,
    "orange": 30,
    "cherry": 28,
    "strawberry": 15,
}

print(sum(myDict.values()))
```

```
87
```

[8]:
```python
# 2.13
str1 = str(input("Input string: "))
print(str1)
uniqueChar = set(str1)
print(len(uniqueChar))
```

```
Input string: Hello VKUer!
Hello VKUer!
10
```

[10]:
```python
# 2.14
myDict = {
    "banana": 14,
    "orange": 30,
    "cherry": 28,
    "strawberry": 15,
}

avg = sum(myDict.values())/len(myDict)
for i in myDict:
    myDict[i] = avg
print(myDict)
```

```
{'banana': 21.75, 'orange': 21.75, 'cherry': 21.75, 'strawberry': 21.75}
```

[13]:
```python
# 2.15
myTuple = ('toan', 'ly', 'hoa', 'sinh', 'su', 'dia', 'gdcd')
if 'gdtc' in myTuple:
    print("Exists")
else:
```

```
    print("Don't exists")
```

```
Don't exists
```

[27]:
```
# 2.16
myTuple = ('toan', 'ly', 'hoa', 'sinh', 'su', 'dia', 'gdcd')
test = list(myTuple)
test.reverse()
a = tuple(test)
print(a)
```

```
('gdcd', 'dia', 'su', 'sinh', 'hoa', 'ly', 'toan')
```

[35]:
```
# 2.17
mySets = {12, 3, 5, 93, 20, 6, -9}
print("Max number: ", max(mySets))
print("Min number: ", min(mySets))
```

```
Max number:  93
Min number:  -9
```

[46]:
```
# 2.18
setA = {"banana", "cherry", "mango", "dragonfruit", "apple", "math"}
setB = {"banana", "cherry"}

chk = setB.issuperset(setA)
print(setA)
print(setB)
print(chk)
```

```
{'math', 'dragonfruit', 'mango', 'apple', 'banana', 'cherry'}
{'banana', 'cherry'}
False
```

[48]:
```
# 2.19
setA = {1, 2, 3, 4, 5}
setB = {4, 5, 6, 7, 8}

setA.difference_update(setB)
print(setA, setB)
```

```
{1, 2, 3} {4, 5, 6, 7, 8}
```

[49]:
```
# 2.20
listA = [9, 1, 2, -1, 8, 2, 4]
mul = 1
for i in listA:
    if (i % 2 == 0 ):
        mul *=i
print(mul)
```

128

[7]:
```
# 2.21
def taxiCal(km):
    return 16000 + km * 8000;

km = int(input("Km: "));
print("Total:", taxiCal(km), "VND");
```

```
Km: 10
Total: 96000 VND
```

[21]:
```
# 2.22
n = int(input("Enter N: "))
with open('BaiLab.txt', 'r') as filedata:
    line = filedata.readlines()

for i in line[len(line)-n:len(line)]:
    print(i, end="")

filedata.close()
```

```
Enter N: 4
Tran
Nguyen
Vinh
Uy
```

[29]:
```
# 2.23
with open('BaiLab.txt', 'r') as filedata:
    line = filedata.readlines()

print("Number of lines: ", len(line))
filedata.close()
```

```
Number of lines:  8
```

[3]:
```
# 2.24
chk = True
sum = 0
while(chk):
    num = input("Enter number: ")
    try:
        sum += float(num)
        print('Current sum: ', sum)
    except:
        print("Not a number")
        if (num == ''):
            chk = False
```

```
print("----------\nTotal: ", sum)
```

```
Enter number: 1
Current sum:  1.0
Enter number: 2
Current sum:  3.0
Enter number: 3
Current sum:  6.0
Enter number: 4
Current sum:  10.0
Enter number: 5
Current sum:  15.0
Enter number: 6
Current sum:  21.0
Enter number: 7
Current sum:  28.0
Enter number: a
Not a number
Enter number:
Not a number
----------
Total:  28.0
```

[8]:
```
# 2.25
n = int(input("Enter n: "))
j = 0
for i in range(n):
    if (i==0):
        print(i, end=' ')
    elif (i==1):
        sum = j = 3
        print("3", end=' ')
    else:
        sum+=2
        j+=sum
        print(j, end =' ')
```

```
Enter n: 8
0 3 8 15 24 35 48 63
```

[1]:
```
# 2.26 with recursion
def fiboRec(n):
    if n <= 0:
        return []
    elif n == 1:
        return [0]
    elif n == 2:
```

```
        return [0, 1]
    else:
        fibSeq = fiboRec(n - 1)
        fibSeq.append(fibSeq[-1] + fibSeq[-2])
        return fibSeq

def fiboWithoutRec(n):
    if n <= 0:
        return []
    elif n == 1:
        return [0]
    elif n == 2:
        return [0, 1]
    else:
        fibo = [0,1]
        for i in range(2, n):
            fibo.append(fibo[-1]+fibo[-2])
        return fibo
n = int(input("Enter n: "))
print("Fibonacci with recursion: ", fiboRec(n))
print("Fibonacci without recursion: ", fiboWithoutRec(n))
```

```
Enter n: 10
Fibonacci with recursion:  [0, 1, 1, 2, 3, 5, 8, 13, 21, 34]
Fibonacci without recursion:  [0, 1, 1, 2, 3, 5, 8, 13, 21, 34]
```

[27]:
```
# 2.27
def findLargestFibo(n):
    if (n<=0):
        return -1
    elif(n==1):
        return 0
    elif(n<=2):
        return 1
    else:
        fibo = [0,1]
        while(True):
            num = fibo[-1]+fibo[-2]
            if(num<n):
                fibo.append(num)
            else:
                break
        return fibo[-1]

n = int(input("Enter n: "))
print("Largert Number: ", findLargestFibo(n))
```

```
Enter n: 90
```

```
Largert Number:  89
```

[28]:
```python
# 2.28
def totalCal(n):
    total = 0
    for i in range(n):
        if (i%3==0) or (i%5==0):
            total += i
    return total

n = int(input("Enter number: "))
print("Total: ", totalCal(n))
```

```
Enter number: 10
Total:  23
```

[42]:
```python
# 2.29
def rearrangeNum(n):
    oddNum, evenNum = [], []
    for i in range(len(n)):
        if(n[i]%2==0):
            evenNum.append(n[i])
        else:
            oddNum.append(n[i])
    oddNum.sort()
    evenNum.sort(reverse=True)
    evenNum.extend(oddNum)
    return evenNum

n = int(input("Range: "))
myList =[]
for i in range(n):
    inputNum = int(input())
    myList.append(inputNum)

print(myList)
print(rearrangeNum(myList))
```

```
Range: 8
-2
6
3
5
8
2
5
1
[-2, 6, 3, 5, 8, 2, 5, 1]
```

```
[8, 6, 2, -2, 1, 3, 5, 5]
```

[ ]: