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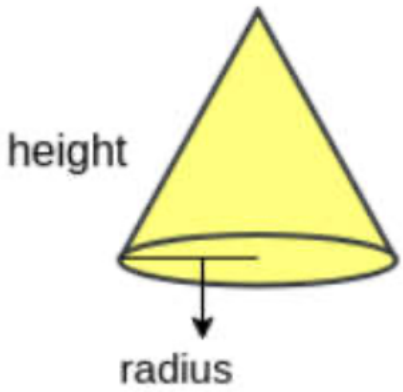
PROBLEM SHEET

05/11/2020

ACTIVITY 1

Write a python program to find the volume of a cone.



ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Import math to use the value of pie .*

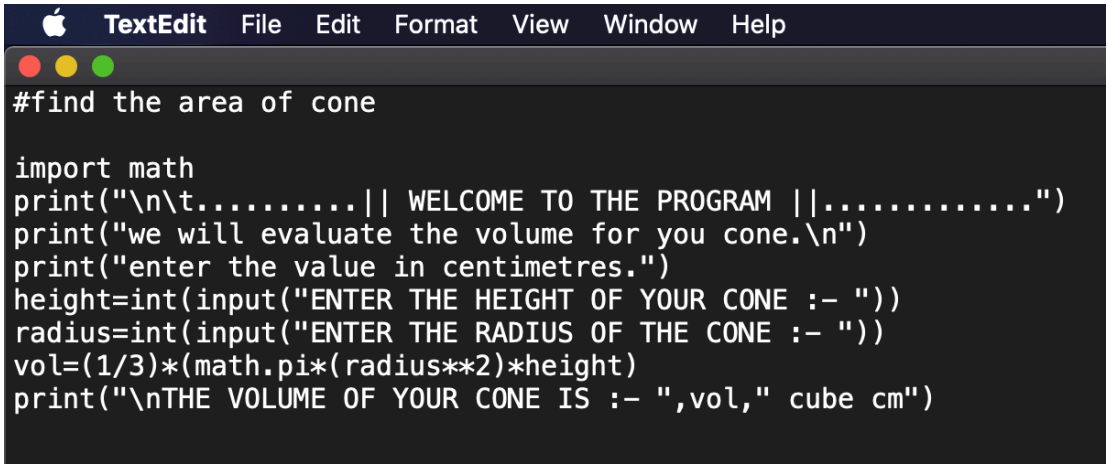
STEP 3 . *Read height and radius as the height and radius of the cone respectively from user.*

STEP 4 . *Evaluate vol = (1/3)pie*(radius^2)*height (vol=(1/3)*(math.pi*(radius**2)*height)) as volume of cone*

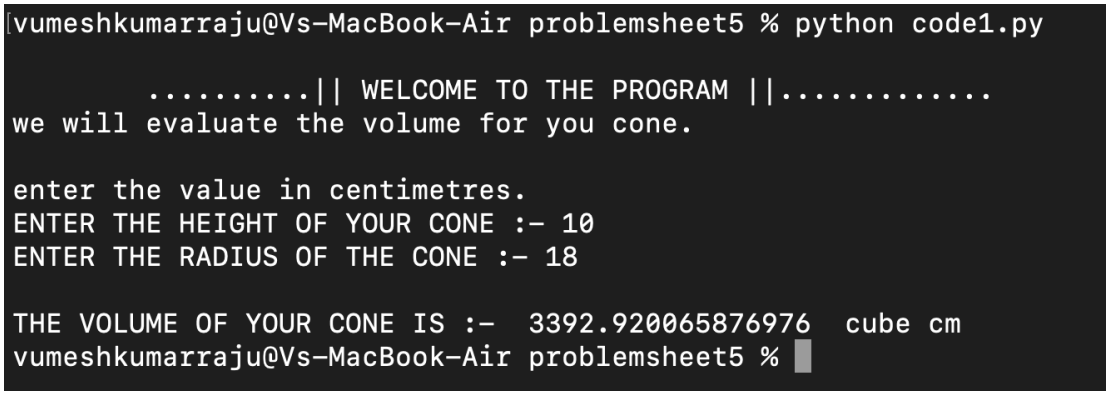
STEP 5 . *Print the vol as volume of the cone.*

STEP 6 . *stop*

PROGRAM:

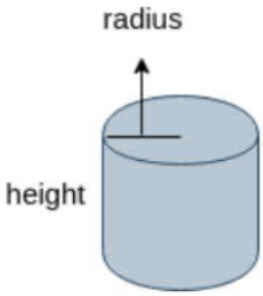


OUTPUT:



ACTIVITY 2

Write a python program to find the volume of a cylinder.



ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Import math to use the value of pie .*

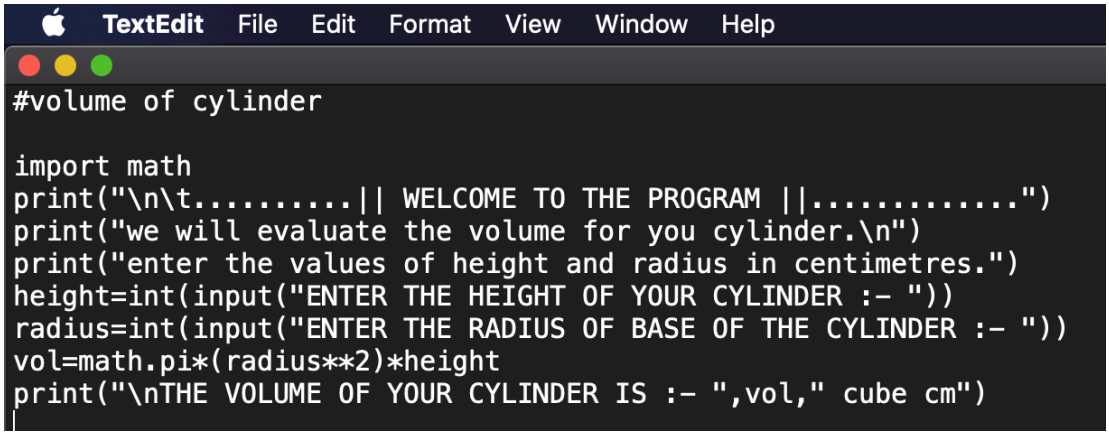
STEP 3 . *Read height and radius as the height and radius of the cylinder respectively from user.*

STEP 4 . *Evaluate vol = pie*(radius^2)*height (vol=math.pi*(radius**2)*height) as volume of cylinder*

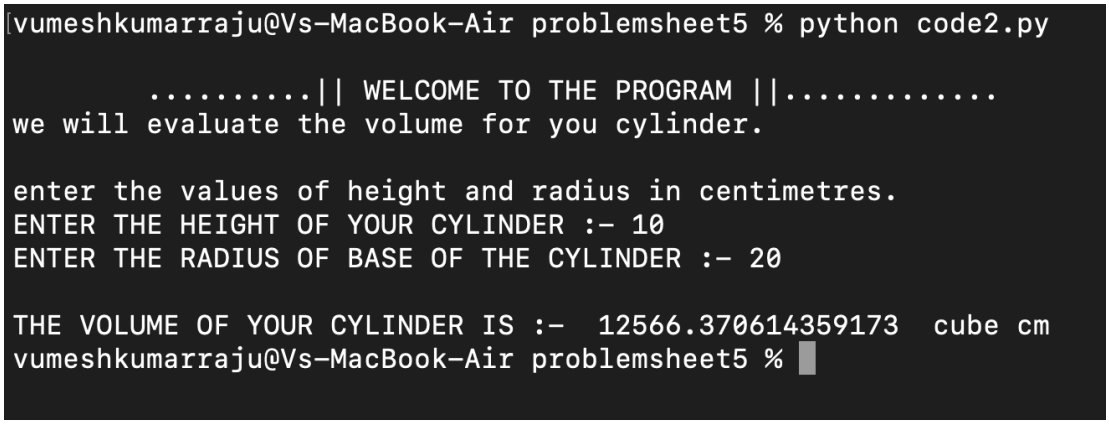
STEP 5 . *Print the vol as volume of the cylinder.*

STEP 6 . *stop*

PROGRAM:



OUTPUT:



ACTIVITY 3

Write a python program to convert Celsius into Fahrenheit.

ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read c_temp as the temperature in Celsius .*

STEP 3 . *Evaluate f_temp=((c_temp*9)/5)+32 as the temperature in Fahrenheit.*

STEP 4 . *Print f_temp as the converted temperature in Fahrenheit.*

STEP 5 . *stop*

PROGRAM:

```
#convert Celsius into fahrenheit

print("\n\t..........|| WELCOME TO THE PROGRAM ||.............")
print("we will convert the celcius to fahrenheit.\n")
print("enter the temprature in CELCIUS.")
c_temp=float(input("ENTER THE TEMPRATURE IN DEGREE CELCIUS :- "))
f_temp=((c_temp*9)/5)+32
print("TEMPRATURE IN FAHRENHEIT :- ",f_temp)
```

OUTPUT:

```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code3.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will convert the celcius to fahrenheit.

enter the temprature in CELCIUS.
ENTER THE TEMPRATURE IN DEGREE CELCIUS :- 32
TEMPRATURE IN FAHRENHEIT :-  89.6
vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 4

Write a python program to find the simple interest

ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read p, r, t as the principal amount, rate of interest, time from user.*

STEP 3 . *Evaluate si = p*r*t/100 as the simple interest.*

STEP 4 . *Print si as the simple interest.*

STEP 5 . *Stop*

PROGRAM:

```
#finding the simple interest

print("\n\t.........|| WELCOME TO THE PROGRAM ||.............")
print("we will find the simple interest.\n")
p=float(input("PLEASE ENTER THE PRINCIPAL AMOUNT :- "))
r=float(input("PLEASE ENTER THE RATE OF INTEREST :- "))
t=float(input("PLEASE ENTER THE TIME PERIOD (IN YEARS) :- "))
si=p*r*t/100
print("THE SIMPLE INTEREST IS :- ",si," /- ")
```

OUTPUT:

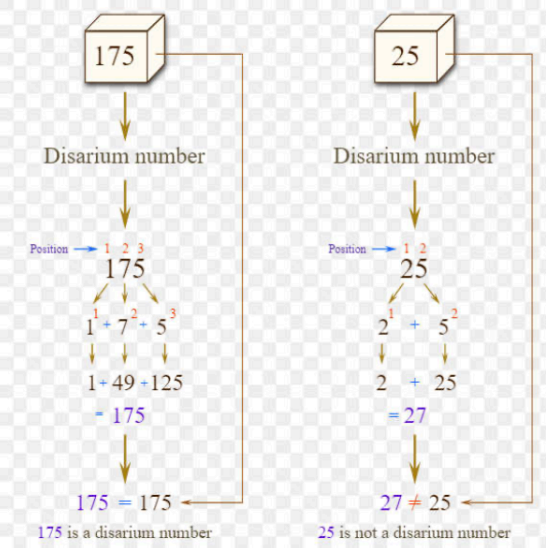
```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code4.py

        .........|| WELCOME TO THE PROGRAM ||.............
we will find the simple interest.

PLEASE ENTER THE PRINCIPAL AMOUNT :- 520000
PLEASE ENTER THE RATE OF INTEREST :- 12
PLEASE ENTER THE TIME PERIOD (IN YEARS) :- 7
THE SIMPLE INTEREST IS :-  436800.0  /-
vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 5

Write a python program to check weather number is disarium number.



ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read num as the integer to be checked.*

STEP 3 . *Initialize count=0, sum=0, num1=num, num_check=num*

STEP 4 . *Count the number of digits in num*

(1) While num not equals to 0(num1!=0)

(a) Update count = count+1

(b) num1=integer part of num1/10

STEP 5 . *for the value of i between count to 0*

(1) evaluate dig = num%10(reminder when num is divided by 10).

*(2) Update sum=sum+dig^i(sum=sum+dig**i)*

(3) num=integer part of num/10

(4) i = i-1

STEP 6 . *check if sum equals to num_check(sum==num_check) then print number is a disarium number*

else print the number is not a disarium number.

STEP 7 . *Stop*

PROGRAM:

```
#to check weather a number is disarium or not

print("\n\t.........|| WELCOME TO THE PROGRAM ||.............")
print("we will check weather your entered number is disarium or not.")
num=int(input("ENTER AN INTEGER = "))
count=0
sum=0
num1=num
num_check=num
while num1!=0:
      count+=1
      num1=int(num1/10)
for i in range(count,0,-1):
      dig=num%10
      sum=sum+dig**i
      num=int(num/10)
print("the sum of the digits to the pwoer to their places = ",sum)
if sum==num_check:
      print(num_check," is a disarium number.")
else:
      print(num_check," is not a disarium number.")
```

OUTPUT:

```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code5.py

        .........|| WELCOME TO THE PROGRAM ||.............
we will check weather your entered number is disarium or not.
ENTER AN INTEGER = 175
the sum of the digits to the pwoer to their places =  175
175  is a disarium number.
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code5.py

        .........|| WELCOME TO THE PROGRAM ||.............
we will check weather your entered number is disarium or not.
ENTER AN INTEGER = 224
the sum of the digits to the pwoer to their places =  70
224  is not a disarium number.
vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 6

Write a python program to print all the disarium number between a given range.

ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read a and b as the starting range and ending range respectively.*

STEP 3 . *For the value of x between a to b+1*

(1) Initialize num=x,count=0, sum=0, num1=num

(2)Count the number of digits in num

While num not equals to 0(num1!=0)

(a) Update count = count+1

(b) num1=integer part of num1/10

(3) for the value of i between count to 0

a. evaluate dig = num%10(reminder when num is divided by 10).

*b. Update sum=sum+dig^i(sum=sum+dig**i)*

c. num=integer part of num/10

d. i = i-1

(4) if sum==x then print x end with space.

STEP 4 . *Stop*

PROGRAM:

TextEdit File Edit Format View Window Help

code6.py

```
#to show all the disarium number in a given range

print("\n\t..........|| WELCOME TO THE PROGRAM ||.............")
print("we will print all the disarium numbers in your entered range.")
a=int(input("enter the starting range = "))
b=int(input("enter the ending range = "))
print("THE DISARIUM NUMBERS BETWEEN ",a," AND ",b,end=" ARE :-")
for x in range(a,b+1):
      num=x
      count=0
      sum=0
      num1=num
      while num1!=0:
            count+=1
            num1=int(num1/10)
      for i in range(count,0,-1):
            dig=num%10
            sum=sum+dig**i
            num=int(num/10)
      if(sum==x):
            print(x,end=" ")
```

OUTPUT:

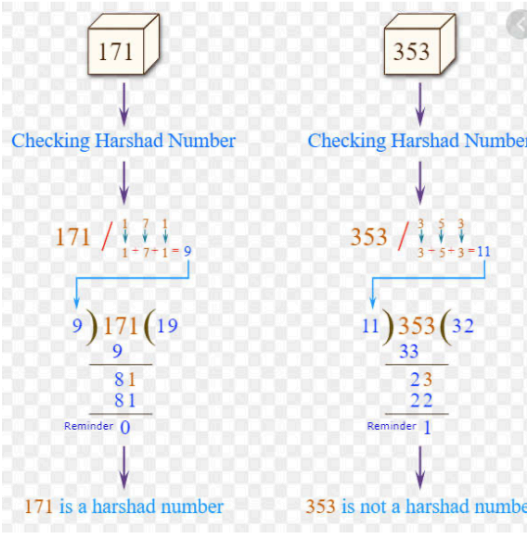
```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code6.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will print all the disarium numbers in your entered range.
enter the starting range = 1
enter the ending range = 180
THE DISARIUM NUMBERS BETWEEN  1  AND  180 ARE :-1 2 3 4 5 6 7 8 9 89 135 175 %
vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 7

Write a python program to check weather a number is harshad number.

A number is said to be harshad number if it is divisible by the sum of the digit.



ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read num a the integer to be checked.*

STEP 3 . *Initialize num_copy=num, sum=0*

STEP 4 . *While num not equals to zero (num!=0)*

- a) *Evaluate dig=num%10(reminder when num divided by 10)*
- b) *Update sum=sum+dig*
- c) *Update num=integer part of num/10(num=int(num/10))*

STEP 5 . *If num_copy%sum==0(reminder is 0 when num_copy is divided by sum) print num_copy is a harshad number*
Else print num_copy is not a harshad number.

STEP 6 . *Stop*

PROGRAM:

TextEdit File Edit Format View Window Help

```
#to check weather a nu,mber is harshad number or not

print("\n\t..........|| WELCOME TO THE PROGRAM ||.............")
print("we will check wether your entered number is harshad or not.\n")
num=int(input("ENTER AN INTEGER = "))
num_copy=num
sum=0
while num!=0:
      dig=num%10
      sum=sum+dig
      num=int(num/10)
if num_copy%sum==0:
      print(num_copy," IS A HARSHAD NUMBER.")
else:
      print(num_copy," IS NOT A HARSHAD NUMBER.")
```

OUTPUT:

```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code7.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will check wether your entered number is harshad or not.

ENTER AN INTEGER = 171
171  IS A HARSHAD NUMBER.
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code7.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will check wether your entered number is harshad or not.

ENTER AN INTEGER = 5673
5673  IS NOT A HARSHAD NUMBER.
vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 8

Write a python program to check weather a number is pronic number.

- A number is said to be pronic number if it is a product of two consecutive numbers.

Example Pronic numbers:

6 = 2 x 3

72 = 8 x 9

ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read num as the number to be checked.*

STEP 3 . *Initialize k=0,fact=1,i=1*

STEP 4 . *While fact <=num*

(a) if fact is equal to num(fact==num)

- *print i, symbol '*', i+1, symbol" = " and fact.*
- *print num is a pronic number.*
- *k=2*

(b) update i=i+1

STEP 5 . *if k equals to 0(k==0) print num is not a pronic number.*

STEP 6 . *Stop*

PROGRAM:

TextEdit File Edit Format View Window Help

```
#to check weather a bumber is pronic or not.

print("\n\t..........|| WELCOME TO THE PROGRAM ||.............")
print("we will chck wether your entered number is pronic or not.\n")
num=int(input("ENTER AN INTEGER = "))
k=0
i=1
fact=1
while fact<=num:
      fact=i*(i+1)
      if fact==num:
            print(i,'*',i+1," = ",fact)
            print(num," IS A PRONIC NUMBER.")
            k=2
      i+=1
if k==0:
      print(num," IS NOT A PRONIC NUMBER.")
```

OUTPUT:

```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code8.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will chck wether your entered number is pronic or not.

ENTER AN INTEGER = 132
11 * 12  =  132
132  IS A PRONIC NUMBER.
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code8.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will chck wether your entered number is pronic or not.

ENTER AN INTEGER = 67
67  IS NOT A PRONIC NUMBER.
vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 9

Write a python program to print following pattern.

```
5432*
543*1
54*21
5*321
*4321
```

ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read line as the number of lines to be print the pattern*

STEP 3 . *For the value of i in between 1 to line+1*

(1) For the value of j in between line to 0

(a) If j equals to i (j==i) print '' symbol ends with white space*

Else print j end with white space

(b) j=j-1 updates after succession of every loop.

(2) print a new line

(3) i=i+1 updates after succession of every loop

STEP 4 . *stop*

PROGRAM:

```
#printing a pattern using umbers

print("\n\t.........|| WELCOME TO THE PROGRAM ||.............")
print("we will show a pattern as your entered number of lines.\n")
line=int(input("ENTER NUMBER OF LINES = "))
for i in range(1,line+1):
      for j in range(line,0,-1):
            if i==j:
                  print('*',end=" ")
            else:
                  print(j,end=" ")
      print("\n")
```

OUTPUT:

```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code9.py

        .........|| WELCOME TO THE PROGRAM ||.............
we will show a pattern as your entered number of lines.

ENTER NUMBER OF LINES = 7
7 6 5 4 3 2 *

7 6 5 4 3 * 1

7 6 5 4 * 2 1

7 6 5 * 3 2 1

7 6 * 4 3 2 1

7 * 5 4 3 2 1

* 6 5 4 3 2 1

vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```

ACTIVITY 10

Write a python program to print following pattern.

```
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
6 12 18 24 30 36
7 14 21 28 35 42 49
8 16 24 32 40 48 56 64
9 18 27 36 45 54 63 72 81
10 20 30 40 50 60 70 80 90 100
```

ALGORITHM:

STEP 1 . *Start*

STEP 2 . *Read line as number of lines to print the pattern.*

STEP 3 . *For the value of i between 1 to line+1*

(1) For the value of j between 1 to i+1

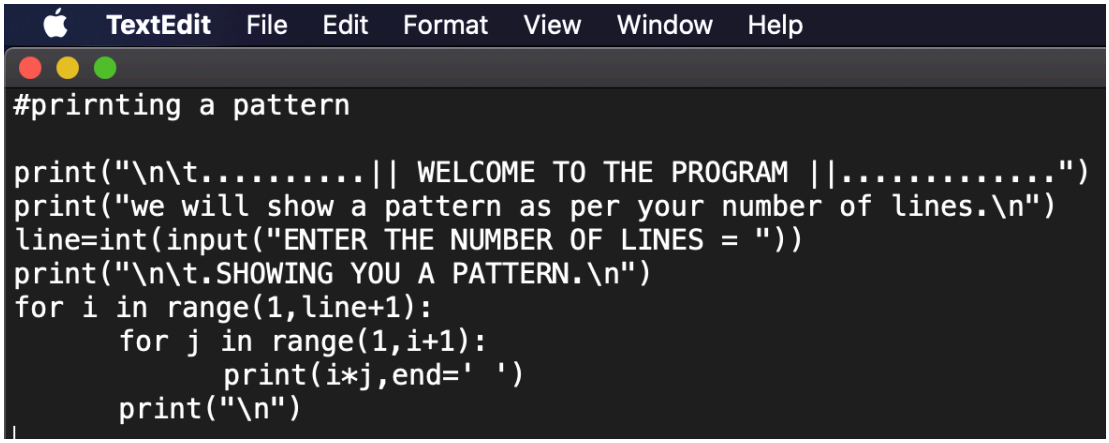
*(a) Print the value of i*j end with a white space.*

(2) Print a new line

(3) i=i+1 after every succession of loop.

STEP 4 . *Stop*

PROGRAM:



OUTPUT:

```
vumeshkumarraju@Vs-MacBook-Air problemsheet5 % python code10.py

        ..........|| WELCOME TO THE PROGRAM ||.............
we will show a pattern as per your number of lines.

ENTER THE NUMBER OF LINES = 15

        .SHOWING YOU A PATTERN.

1

2 4

3 6 9

4 8 12 16

5 10 15 20 25

6 12 18 24 30 36

7 14 21 28 35 42 49

8 16 24 32 40 48 56 64

9 18 27 36 45 54 63 72 81

10 20 30 40 50 60 70 80 90 100

11 22 33 44 55 66 77 88 99 110 121

12 24 36 48 60 72 84 96 108 120 132 144

13 26 39 52 65 78 91 104 117 130 143 156 169

14 28 42 56 70 84 98 112 126 140 154 168 182 196

15 30 45 60 75 90 105 120 135 150 165 180 195 210 225

vumeshkumarraju@Vs-MacBook-Air problemsheet5 %
```