lab2_2140232

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2140232

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lab revision 2

1. write a calculator program

[ ]:
```
i = eval(input("Enter 2 numbers with an operator(+,-,/,*,**) in between : "))

print(i)
```

```
Enter 2 numbers with an operator(+,-,/,*,**) in between : 5 - (9*4)
-31
```

2. find roots of a quadratic equation

[ ]:
```
import cmath

print("ax^2 + bx + c ")
a = int(input("Enter a: "))
b = int(input("Enter b: "))
c = int(input("Enter c: "))
print("the equation is :",str(a)+"x^2 + ",str(b)+"x + ",str(c) )

d = b**2-4*a*c
d1 = d**0.5
if(d < 0):
    print("The roots are imaginary. ")
    root1 = (-b + cmath.sqrt(b**2 - 4 * a * c))/ (2 * a)
    root2 = (-b - cmath.sqrt(b**2 - 4 * a * c))/ (2 * a)
    print('Has two complex roots:')
    print(root1)
    print(root2)
else:
    r0 = (-b+d1)/2*a
    r1 = (-b-d1)/2*a
    print("The first root: ", round(r0, 2))
    print("The second root: ", round(r1, 2))
```

```
ax^2 + bx + c
Enter a: 23
Enter b: 2
Enter c: 5
the equation is : 23x^2 +  2x +  5
The roots are imaginary.
Has two complex roots:
(-0.043478260869565216+0.46422079356657875j)
(-0.043478260869565216-0.46422079356657875j)
```

3. check if a given number is perfect or not

[ ]:
```
d = int(input("Enter a number : "))
l = []
for i in range(1,d):
    if d%i == 0:
        l.append(i)

if sum(l) == d:
    print("it is a perfect number")
else:
    print("not a perfect number")
```

```
Enter a number : 4
not a perfect number
```

4. check if a number is perfect square

[ ]:
```
import math as m
f = float(input("enter a number : "))
k = m.sqrt(f)

if k%1 == 0:
    print("it is a perfect square")
else:
    print("it is not a perfect square")
```

```
enter a number : 4
it is a perfect square
```

5. find pefect squares between 2 given numbers

[ ]:
```
import math as m
a = int(input("enter the lower bound : "))
b = int(input("enter the upper bounf : "))


p = []
for i in range(a,b+1):
    q = m.sqrt(i)
```

```
    if q%1 == 0:
        p.append(i)


print("The perfect squares are : ", p)
```

```
enter the lower bound : 1
enter the upper bounf : 100
The perfect squares are :  [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```