PYTHON FOR DATA SCIENCE ¶

LAB - 04

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4a. To shuffle a deck of cards using module random and draw 8 cards

In [1]:
```
import itertools, random
deck = list(itertools.product(range(1,14),['Spade', 'Heart', 'Diamond', 'Club'
]))

for i in range(52):
    print(deck[i][0], 'of', deck[i][1])
```

```
1 of Spade
1 of Heart
1 of Diamond
1 of Club
2 of Spade
2 of Heart
2 of Diamond
2 of Club
3 of Spade
3 of Heart
3 of Diamond
3 of Club
4 of Spade
4 of Heart
4 of Diamond
4 of Club
5 of Spade
5 of Heart
5 of Diamond
5 of Club
6 of Spade
6 of Heart
6 of Diamond
6 of Club
7 of Spade
7 of Heart
7 of Diamond
7 of Club
8 of Spade
8 of Heart
8 of Diamond
8 of Club
9 of Spade
9 of Heart
9 of Diamond
9 of Club
10 of Spade
10 of Heart
10 of Diamond
10 of Club
11 of Spade
11 of Heart
11 of Diamond
11 of Club
12 of Spade
12 of Heart
12 of Diamond
12 of Club
13 of Spade
13 of Heart
13 of Diamond
13 of Club
```

In [2]:
```
random.shuffle(deck)

# shuffling

for i in range(8):
    print(deck[i][0], 'of', deck[i][1])
```

```
5 of Diamond
11 of Club
6 of Diamond
3 of Spade
8 of Diamond
12 of Diamond
5 of Club
2 of Club
```

4b. To display calendar of selected month and year by a user

In [3]:
```
import calendar as c
yy = int(input("Enter a year:"))
mm = int(input("Enter a month:"))

print(c.month(yy, mm))
```

```
Enter a year:2001
Enter a month:07
     July 2001
Mo Tu We Th Fr Sa Su
                   1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
```

4c. To solve the quadratic equation ax**2 + bx + c = 0.

In [5]:
```
import math

a = float(input('Enter a: '))
b = float(input('Enter b: '))
c = float(input('Enter c: '))

# discriminant
disc = (b**2) - (4*a*c)

if(disc==0):
    print("Roots are equal")
    root1 = root2 = -b / ( 2 * a)
    print('The roots values are {0} and {1}'.format(root1,root2))
elif ( disc > 0 ):
    print("Roots are real and distinct")
    root1 = (-b+math.sqrt(disc))/(2*a)
    root2 = (-b-math.sqrt(disc))/(2*a)
    print('The roots values are {0} and {1}'.format(root1,root2))
else:
    print("Roots are imaginary")
    root1 = -b /( 2 * a )
    root2 =  math.sqrt(-disc)/(2*a)
    print('The roots values are {0} and {1}'.format(root1,root2))
```

```
Enter a: 65
Enter b: 43
Enter c: 8
Roots are imaginary
The roots values are -0.33076923076923076 and 0.11691295502746664
```

In [7]:
```
import cmath

a = float(input('Enter a: '))
b = float(input('Enter b: '))
c = float(input('Enter c: '))

# discriminant
disc = (b**2) - (4*a*c)

if(disc==0):
    print("Roots are equal")
    root1 = root2 = -b / ( 2 * a)
elif ( disc > 0 ):
    print("Roots are real and distinct")
    root1 = (-b+cmath.sqrt(disc))/(2*a)
    root2 = (-b-cmath.sqrt(disc))/(2*a)
else:
    print("Roots are imaginary")
    root1 = -b /( 2 * a )
    root2 =  cmath.sqrt(-disc)/(2*a)


print('The roots values are {0} and {1}'.format(root1,root2))
```

```
Enter a: -9
Enter b: -654
Enter c: 8
Roots are real and distinct
The roots values are (-72.67889702410584-0j) and (0.012230357439161961-0j)
```