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```
import copy
class Polynomial:

    def __init__(self, dictpoly={}):
        """initializing dictionary of polynomial"""
        self.dictpoly = dictpoly

    def printpoly(self, expo):
        """print coefficient of each needed exponent"""
        if self.dictpoly.has_key(expo) == 1:
            polyprint = self.dictpoly[expo]
        else:
            polyprint = 0
        return polyprint

    def __str__(self):
        """defining method str for representin poly as str"""
        self.str = ""
    for key,value in self.dictpoly.items():
            if value==0:
            self.str += ""
            elif value>0:
            sign = "+"
            self.str += sign
            self.str += str(value) +"X**"+ str(key)
            elif value<0:
            self.str += str(value) +"X**"+ str(key)
        return self.str

    def __len__(self):
        """modifying the length function"""              #it will give us the highest value
        return max(self.dictpoly.keys())                 #of exponent in a polynomial

    def __add__(self,other):
        """modifying add operator"""                     #it will give us the result of
      copydictpoly = copy.deepcopy(self.dictpoly)        #adding two polynomials
      for key in other.dictpoly.keys():
            if key in self.dictpoly:
            copydictpoly[key] += other.dictpoly[key]
            else:
            copydictpoly[key] = other.dictpoly[key]
    return Polynomial(copydictpoly)

    def __sub__(self,other):
        """modifying subtraction operator"""             #it will give us the result of
    copydictpoly = copy.deepcopy(self.dictpoly)          #subtraction of two polynomials
    for key in other.dictpoly.keys():
        if key in self.dictpoly:
            copydictpoly[key] -= other.dictpoly[key]
            else:
            copydictpoly[key] = -other.dictpoly[key]
    return Polynomial(copydictpoly)
```

```
### Importing polynomials by user ################

dict1 = {}
decision1 = str('y')

print "enter polynomial1 terms"
while(decision1 == 'y'):
        expo1 = int(raw_input("enter exponent value \n"))
        coef1 = int(raw_input("enter coeff value \n"))
        dict1[expo1]=coef1
        decision1 = raw_input("y to enter another term, n to polynomial2\n")

dict2 = {}
decision2 = str('y')

print "enter polynomial2 terms"
while(decision2 == 'y'):
        expo2 = int(raw_input("enter exponent value \n"))
        coef2 = int(raw_input("enter coeff value \n"))
        dict2[expo2]=coef2
        decision2 = raw_input("y to enter another term, press n to exit\n")

pol1 = Polynomial(dict1)
pol2 = Polynomial(dict2)

#####################################################

print "polynomial1 =\t", pol1
print "highest exponent of polynomial: ", len(pol1)

print "polynoimal2 =\t", pol2
print "highest exponent of polynomial: ", len(pol2)

print "polynomial1 + polynomial2 =\t", pol1+pol2
print "polynomial1 - polynomial2 =\t", pol1-pol2

#####################################################
Sample Results:

polynomial1 =                   +2X**0+2X**1+2X**2+4X**3
highest exponent of polynomial:  3
polynoimal2 =                   +4X**1-3X**2+3X**4
highest exponent of polynomial:  4
polynomial1 + polynomial2 =     +2X**0+6X**1-1X**2+4X**3+3X**4
polynomial1 - polynomial2 =     +2X**0-2X**1+5X**2+4X**3-3X**4
```