Exercise 5

class Polynomial:

def \_\_init\_\_(self,coeffs):

self.coeffs=coeffs

def evalute(self,x):

result=0

for exp,coeff in self.coeffs.items():

result+=coeff\*(x\*\*exp)

return result

def \_\_add\_\_(self,other):

result\_coeffs={}

for exp,coeff in self.coeffs.items():

result\_coeffs[exp]=coeff

for exp,coeff in other.coeffs.items():

result\_coeffs[exp]=result\_coeffs.get(exp,0)+coeff

return Polynomial(result\_coeffs)

def \_\_str\_\_(self):

terms=[]

for exp,coeff in self.coeffs.items():

if exp==0:

term=str(coeff)

elif exp==1:

term=f"{coeff}X"

else:

term=f"{coeff}X^{exp}"

terms.append(term)

return"+".join(terms)

poly1=Polynomial({2:3,1:2,0:5})

poly2=Polynomial({2:2,1:-1,0:3})

print("Polynomial 1:",poly1)

print("Polynomial 2:",poly2)

sum\_poly=poly1+poly2

print ("sum:",sum\_poly)

X\_value=2

print (f"evaluting at X={X\_value}:")

print("poly1:",poly1.evalute(X\_value))

print("poly2:",poly2.evalute(X\_value))

print("sum:",sum\_poly.evalute(X\_value))

output

Polynomial 1: 3X^2+2X+5

Polynomial 2: 2X^2+-1X+3

sum: 5X^2+2X+5

evaluting at X=2:

poly1: 21

poly2: 9

sum: 30