Write a python code to predict the future population by Extrapolation Method

```python
import numpy as np

year=np.array([1950,1960,1970,1980,1990,2000,2010],dtype=float)

pop=np.array([38.07,45.17,51.01,56.83,62.37,68.91,76.23])#in millions

pop=1e6*pop

print("year=",year)

print("population",pop)

yrnew=year[0:-1]

print("yrnew=",yrnew)

popnew=pop[0:-1]

print("popnew=",popnew)


n=len(yrnew)

print("n=",n)

p5=np.polyfit(yrnew,popnew,3)

p5=np.poly1d(p5)

print(p5)
```

```python
x=np.linspace(np.min(year),np.max(year),8)
Fp=np.polyval(p5,x)
print("predicted pop for 2010 is",Fp[-1])
print("%error=",(Fp[-1]-pop[-1])*100/pop[-1])

import matplotlib.pyplot as plt
plt.plot(year,pop,"r")
plt.plot(x,Fp,"b")
plt.xlabel("year")
plt.ylabel("population in 1e7")
plt.legend(['actual','predicted'],loc=4)
```

year= [1950. 1960. 1970. 1980. 1990. 2000. 2010.]

population [38070000. 45170000. 51010000. 56830000. 62370000. 68910000. 76230000.]

yrnew= [1950. 1960. 1970. 1980. 1990. 2000.]

popnew= [38070000. 45170000. 51010000. 56830000. 62370000. 68910000.]

n=6

$97.41 x^3 - 5.779e+05 x^2 + 1.143e+09 x - 7.542e+11$

predicted pop for 2010 is 76676666.66601562

%error= 0.5859460396374458