MAT2001 Lab

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Example4 Following table gives the census population of a state for the years 1971 to 2011. Estimate the population for the years1974 and 2005 by using appropriate interpolation technique.

Year	1971	1981	1991	2001	2011
Population (Million)	46	66	81	93	101

Newton forward
y(1974)=52.7645
Newton backward
y(2005)=96.837.

By Lagrange
y(1974)=52.764488;
y(2005)=96.836800

X	y
40	31
50	73
60	124
70	159

MATLAB CODE:

```
clc;
clear all;
close all;
x=[1971 1981 1991 2001 2011]
y=[46 66 81 93 101]
n=length(x)
X=2005;
Y=0;
for i=1:n
        L(i)=1
        for j=1:n
        L(i)=L(i)*(X-x(j))/(x(i)-x(j));
        end

end
Y=Y+L(i)*y(i)
```