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**BSCS – 6A**

**180459**

**Task:** Find Lagrange Interpolation polynomial fitting the points given in the following table and evaluate  $f(3)$ .

**Function:**

```
function [eqn] = lagrange(x1, y)
syms x;
eqn = 0;
n = length(x1);
for j = 1 : n
    prod = 1;
    for i = 1 : n
        if i~=j
            prod = prod * (x-x1(i))/(x1(j)-x1(i));
        end
    end
    eqn = eqn + prod*y(j);
end
```

**Main:**

```
x1 = [0 2 4 6 9 11 12 15 17 19];
y = [5 6 7 6 9 8 7 10 12 12];
eqn = lagrange(x1,y);
disp(eqn);
disp(double(subs(eqn,0)));
```

**Screenshot:**

```
>> main
(x*(x - 2)*(x - 4)*(x - 6)*(x - 9)*(x - 11)*(x - 12)*(x - 15)*(x - 17))/23514400 - ((x/2 - 1)*(x
5
```