Algorithm: Superposition of waves

Include predefined class libraries / header files in the program using preprocessor directive #include <iostream> , <cmath> , <fstream>

using namespace std;

Class declaration: declare a class “superposition”

Private member declaration:

Data variables:
declare float type data variables “a1,a2,w1,w2,p1,p2,r1,r2,t,pi,y1,y2,y”

Public member declaration:
Declare member function (1) getdata (2) calculate of type void

Member function definition:
Define member functions getdata using scope resolution operator

“void superposition::getdata()”

Get input from user:

"enter amplitude,phase,freq of first wave"
The input is written in allocated memory space using
“cin>>a1>>p1>>w1;”

"enter amplitude,phase,freq of second wave"
The input is written in allocated memory space using
“cin>>a2>>p2>>w2;”

Member function definition:
Define member functions calculate using scope resolution operator
“void superposition::calculation()”

Perform the calculations and output the results into file named “super.txt”

```
void superposition::calculate()
{
 pi=4*atan(1);
 r1=(pi/180)*p1;                                  //convert degrees into radian
 r2=(pi/180)*p2;
 ofstream outfile("super.txt");                   //create output file super.txt
for(t=0;t<5;t+=.01)                               //for loop (time)
{
 y1=a1*sin((w1*t)+r1);                            //input wave 1
 y2=a2*sin((w2*t)+r2);                            //input wave 2
 y=y1+y2;                                         //superpostion of waves
outfile<<t<<" "<<y<<" "<<y1<<" "<<y2<<endl;       //output results into super.txt
}
}
```

Inside the main function of type integer, create an object of class superposition and named s. Use this object to call public member functions and terminate the program using return 0 statement

```
int main()
{
superposition s;                    //create object
s.getdata();                        //member function calling
s.calculate();
return 0;                           //program termination
}
```

Plot a graph y, y1, y2 vs t