**PROBLEM 1:**

**#include <stdio.h>**

**int main() {**

**double wavelength, e, d;**

**printf("Enter the wavelength in nanometers (380-750 nm): ");**

**scanf("%lf", &wavelength);**

**printf("Enter the value of e: ");**

**scanf("%lf", &e);**

**printf("Enter the value of d: ");**

**scanf("%lf", &d);**

**if (wavelength < 380 || wavelength > 750) {**

**printf("Out of the range. Please enter a valid number.\n");**

**} else {**

**char \*color;**

**if (wavelength >= 380 && wavelength <= 450) {**

**color = "violet";**

**} else if (wavelength <= 485) {**

**color = "blue";**

**} else if (wavelength <= 500) {**

**color = "cyan";**

**} else if (wavelength <= 565) {**

**color = "green";**

**} else if (wavelength <= 590) {**

**color = "yellow";**

**} else if (wavelength <= 625) {**

**color = "orange";**

**} else {**

**color = "red";**

**}**

**double m = (2 \* e \* d) / wavelength;**

**printf("%d-th order maxima in %s light.\n", (int)m, color);**

**}**

**return 0;**

**}**

**PROBLEM 2:**

**#include <stdio.h>**

**#include <math.h>**

**int main() {**

**double theta = 45.0 \* M\_PI / 180.0;**

**int m = 1;**

**double lambda;**

**printf("Enter the wavelength: ");**

**scanf("%lf", &lambda);**

**double ratio = sin(theta) / m / lambda;**

**printf("%lf\n", ratio);**

**return 0;**

**}**