Laboratory Assignment 1

PH 508 Numerical Methods & Programming

1. Write a C program to convert the temperature from Celsius to Fahrenheit.

2. Write a C program to calculate the time taken for a ball to reach ground if dropped from a height. Input the height. The height must be positive.

3. Write a C program that calculates income tax using following table. Input income.

Income	Tax
<50,000	Nil
50,000 to 60,000	10% of the amount that exceeds 50,000
60,000 to 1,50,000	1,000 + 20% of the amount that exceeds 60,000
>1,50,000	19,000 + 30% of the amount that exceeds 1,50,000

4. Use an 8 digit calculator to compute $P(0.998)$ where

$$P(x) = 1 - 6x + 15x^2 - 20x^3 + 15x^4 - 6x^5 + x^6$$

   Is there anything strange about the answer? (You must calculate term by term as given in the formula).

5. Write a C program that computes $\sin(x)$ using a polynomial approximation

$$\sin(x) = x - x^3/6 + x^5/120$$

   Inform the user if approximation is likely to be bad (that is not more accurate than two digits.) Input angle in degrees.