Task 1

```
#include <stdio.h>

int main(){

int idNumber, wageRate, noOfHours;
float wage, netWage,average, averageWage;
float totalPayroll = 0;
float taxRate = 3.625;
int counter = 1;

for (int i=1; i >= 0; i++){

    printf("EMPLOYEE %d\n", i);
    printf("\n");
    printf("Enter the Identification Number: ");
    scanf("%d", &idNumber);

    printf("Enter the hourly wage rate: ");
    scanf("%d", &wageRate);

    printf("Enter number of hours worked: ");
    scanf("%d", &noOfHours);

    if (noOfHours <= 40)
        wage = noOfHours * wageRate;
    else
        wage = (noOfHours * wageRate) + ((noOfHours - 40) * (wageRate
/ 2));

    netWage = wage - (wage * (taxRate / 100));

    printf("Identification Number: %d\n", idNumber);
    printf("Employee Net Wage: %.2f\n", netWage);
    printf("\n");

    totalPayroll = totalPayroll + wage;
    printf("Total Payroll: %.2f\n", totalPayroll);

    average = totalPayroll / counter;
    printf("Average Payroll: %.2f\n", average);
    printf("\n");

    counter +=1;
    }

return 0;
}
```

Task 2

```
#include <stdio.h>

int main(){

int num;
long factorial = 1;

printf("Enter a positive integer: ");
scanf("%d", &num);

for (int i=2; i<=num; i++){
    factorial = factorial * i;
    }

printf("Factorial: %ld\n", factorial);

return 0;
}
```

Task 3

```
include <stdio.h>
#include <math.h>

int main(){

    float a = 3.592;
    float b = 0.0427;
    float R = 0.08206;
    double volume, moles, temp, initialVolume, finalVolume,
volumeIncrement;

    printf("Enter number of moles: ");
    scanf("%lf", &moles);

    printf("Enter absolute temperature: ");
    scanf("%lf", &temp);

    printf("Enter initial volume in ml: ");
    scanf("%lf", &initialVolume);

    printf("Enter final volume in ml: ");
    scanf("%lf", &finalVolume);

    printf("Enter volume increment in ml: ");
    scanf("%lf", &volumeIncrement);

    //table title print
    printf("Volume(L)\t Pressure(atm)\n");

    //converting ml to L
    initialVolume /= 1000;
    finalVolume /= 1000;
    volumeIncrement /= 1000;

    //calculation
    for (double volume = initialVolume; volume <= finalVolume; volume
+= volumeIncrement) {
        double pressure = (moles * R * temp / (volume - moles * b)) -
(moles * moles * a / (volume * volume));

    printf("%.3lf\t %.3lf\n", volume, pressure);
    }

return 0;
}
~
~
```

Task 4

```
#include <stdio.h>
#include <math.h>

int main(){

double initialAmount, amountRemaining, halfLife;
printf ("Enter the initial amount of Co60 in grams: ");
scanf("%lf", &initialAmount);

halfLife = 5.272;

printf("\nYear\t Amount Remaining\n");

for (int i = 0; i <= 5; i++){

    amountRemaining = initialAmount * exp(-0.693 * i / halfLife);

    printf("%d\t %f grams\n", i, amountRemaining);
    }
return 0;
}
```

Task 05

```
#include <stdio.h>
#include <math.h>

int main(){

double width = 15.0;
double slope = 0.0015;
double roughness = 0.014;
double cubicFeetPerSecond = 1000;;
double depthGuess, flow, error;

printf("Enter depth guess in feet: ");
scanf("%lf", &depthGuess);

while (1){

    double area = depthGuess * width;
    double perimeter = width + (2 * depthGuess);
    double hydraulicRadius = area / perimeter;
    flow = 1.0 / roughness * area * pow(hydraulicRadius, 2 / 3) *
sqrt(slope);

    printf("Depth: %lf feet\nFlow: %lf cubic feet per second\n",
depthGuess, flow);

    error = (flow - cubicFeetPerSecond) / cubicFeetPerSecond / 100;
    if (error <= 0.1)
        printf("The calculated value is within the range of 0.1\n");
        break;

    if (flow < cubicFeetPerSecond)
        printf("Enter a higher depth");
    else
        printf("Enter a lower depth");

    scanf("%lf", &depthGuess);
    }

return 0;
}
```