程設作業 HW3 Part3 Coding

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1. Celsius Temperature Table

1.cpp

```cpp
#include <iostream>
#include <iomanip>
using namespace std;

double Celsius (double Temperature){
    return (Temperature-32)*5/9;

}
int main(){
    cout<<"                Temperature Convert Table:"<<endl;
    for(int j=0;j<65;j++) cout<<"_";
    cout<<endl;
    for (int i=0;i<=20;i++)
    {
        cout<<setw(7)<<right<<i<<" degree Fahrenheit "<<setw(5)
        <<left<<"is equal to ";
        double degree_celsius=Celsius(i);
        cout<<setw(10)<<right<<degree_celsius<<" degree Celsius."<<endl;
    }
}
```

```
"C:\Users\User\Desktop\作業\C++ HW3\1.exe"
                Temperature Convert Table:
_________________________________________________________________
      0 degree Fahrenheit is equal to   -17.7778 degree Celsius.
      1 degree Fahrenheit is equal to   -17.2222 degree Celsius.
      2 degree Fahrenheit is equal to   -16.6667 degree Celsius.
      3 degree Fahrenheit is equal to   -16.1111 degree Celsius.
      4 degree Fahrenheit is equal to   -15.5556 degree Celsius.
      5 degree Fahrenheit is equal to         -15 degree Celsius.
      6 degree Fahrenheit is equal to   -14.4444 degree Celsius.
      7 degree Fahrenheit is equal to   -13.8889 degree Celsius.
      8 degree Fahrenheit is equal to   -13.3333 degree Celsius.
      9 degree Fahrenheit is equal to   -12.7778 degree Celsius.
     10 degree Fahrenheit is equal to   -12.2222 degree Celsius.
     11 degree Fahrenheit is equal to   -11.6667 degree Celsius.
     12 degree Fahrenheit is equal to   -11.1111 degree Celsius.
     13 degree Fahrenheit is equal to   -10.5556 degree Celsius.
     14 degree Fahrenheit is equal to         -10 degree Celsius.
     15 degree Fahrenheit is equal to   -9.44444 degree Celsius.
     16 degree Fahrenheit is equal to   -8.88889 degree Celsius.
     17 degree Fahrenheit is equal to   -8.33333 degree Celsius.
     18 degree Fahrenheit is equal to   -7.77778 degree Celsius.
     19 degree Fahrenheit is equal to   -7.22222 degree Celsius.
     20 degree Fahrenheit is equal to   -6.66667 degree Celsius.

Process returned 0 (0x0)   execution time : 0.068 s
Press any key to continue.
```

2. Present Value

2.cpp

```cpp
#include <iostream>
#include <iomanip>
#include <cmath>
using namespace std;
double future_value,annual_interest_rate;
int number_of_years;

double presentValue(double fvalue,double rate,int years){
    return fvalue/(pow(1+rate,years));
}
int main(){
    cout<<"Please enter the value you expect to draw : ";
    cin>>future_value;
    cout<<"Please enter the annual interest rate : ";
    cin>>annual_interest_rate;
    cout<<"Please enter number of years : ";
    cin>>number_of_years;
    double ans = presentValue(future_value,annual_interest_rate,number_of_years);
    cout<<"You should deposit the value of : "<<ans<<endl;

}
```

```
"C:\Users\User\Desktop\作業\C++ HW3\2.exe"
Please enter the value you expect to draw : 10000
Please enter the annual interest rate : 0.42
Please enter number of years : 10
You should deposit the value of : 299.997

Process returned 0 (0x0)   execution time : 8.250 s
```

3. Stock Profit

3.cpp

```cpp
#include <iostream>
#include <iomanip>
#include <cmath>
using namespace std;
double ns,pp,pc,sp,sc;
double stockprofit(int NS,double PP,double PC,double SP,double SC){
    return ((NS*SP)-SC)-((NS*PP)+PC);
}
int main(){
    cout<<"Please enter the number of shares :";
    cin>>ns ;
    cout<<"Please enter the purchase price per share :";
    cin>>pp ;
    cout<<"Please enter the purchase commission paid :";
    cin>>pc ;
    cout<<"Please enter the sale price per share :";
    cin>>sp ;
    cout<<"Please enter sale commission paid :";
    cin>>sc ;
    double ans=stockprofit(ns,pp,pc,sp,sc);
    if(ans>=0) cout<<"The profit is "<<setw(10)<<left<<ans<<"."<<endl;
    else cout<<"The loss is "<<setw(10)<<left<<ans<<"."<<endl;
    return 0;
}
```

```
3.cpp
選取 "C:\Users\User\Desktop\作業\C++ HW3\3.exe"
Please enter the number of shares :1000
Please enter the purchase price per share :5
Please enter the purchase commission paid :100
Please enter the sale price per share :10
Please enter sale commission paid :100
The profit is 4800      .

Process returned 0 (0x0)   execution time : 31.605 s
Press any key to continue.
```

4. Multiple Stock Sales

```cpp
#include <iostream>
#include <iomanip>
using namespace std;
double num,sum;

double stockprofit(int NS,double PP,double PC,double SP,double SC){
    return ((NS*SP)-SC)-((NS*PP)+PC);
}
void ask_data(){
    static double ns,pp,pc,sp,sc;
    cout<<"Please enter the number of shares :";
    cin>>ns ;
    cout<<"Please enter the purchase price per share :";
    cin>>pp ;
    cout<<"Please enter the purchase commission paid :";
    cin>>pc ;
    cout<<"Please enter the sale price per share :";
    cin>>sp ;
    cout<<"Please enter sale commission paid :";
    cin>>sc ;
    int ans=stockprofit(ns,pp,pc,sp,sc);
    sum+=ans;
    if(ans>=0) cout<<"The profit is "<<ans<<" ."<<endl;
    else cout<<"The loss is "<<ans<<" ."<<endl;
}
int main(){
    cout<<"What is the number of stock sales? ";
    cin>>num;
    while(num--){
        ask_data();
    }
    cout<<"The total of the stocks ";
    if (sum>=0) cout<<"earned : "<<sum<<endl;
    else cout<<"lost : "<<sum<<endl;
    return 0;
}
```

```
"C:\Users\User\Desktop\作業\C++ HW3\4.exe"
What is the number of stock sales? 2
Please enter the number of shares :1000
Please enter the purchase price per share :5
Please enter the purchase commission paid :100
Please enter the sale price per share :7
Please enter sale commission paid :100
The profit is 1800 .
Please enter the number of shares :1000
Please enter the purchase price per share :3
Please enter the purchase commission paid :1000
Please enter the sale price per share :3.5
Please enter sale commission paid :0
The loss is -500 .
The total of the stocks earned : 1300

Process returned 0 (0x0)   execution time : 36.149 s
Press any key to continue.
```

5. Population

```cpp
#include <iostream>
#include <iomanip>
using namespace std;
double Newpopulation;

double population(double P,double B, double D){
    return  P*(1 + B)*(1 - D);
}

int main(){
    double start_size;
    static double birth_rate,death_rate,years;
    do{
        cout<<"The number of years to display : ";
        cin>>years ;
    }while(years<1);
    do{
        cout<<"The starting size of a population : ";
        cin>>start_size ;
    }while(start_size<2);
    do{
        cout<<"The annual birth rate : ";
        cin>>birth_rate ;
    }while ( birth_rate<0);
    do{
       cout<<"The annual death rate : ";
       cin>>death_rate ;
    }while ( death_rate<0);
     int y=1;
    while(years--){
            if (y==1){
                Newpopulation=population(start_size,birth_rate,death_rate);
                cout<<"The projected population at the end of year "<<y<<" : "
                <<setw(10)<<right<<Newpopulation<<endl;
            }
            if(y!=1){
                Newpopulation=population(Newpopulation,birth_rate,death_rate);
                cout<<"The projected population at the end of year "<<y<<" : "
                <<setw(10)<<right<<Newpopulation<<endl;
            }
            y++;
    }
    return 0;
}
```

```
"C:\Users\User\Desktop\作業\C++ HW3\5.exe"
The number of years to display : 0
The number of years to display : 2
The starting size of a population : 1
The starting size of a population : 100
The annual birth rate : -1
The annual birth rate : 0.5
The annual death rate : -0.1
The annual death rate : 0
The projected population at the end of year 1 :        150
The projected population at the end of year 2 :        225

Process returned 0 (0x0)   execution time : 23.702 s
Press any key to continue.
```

6. Transient Population

4.cpp | 5.cpp | *6.cpp

```cpp
#include <iostream>
#include <iomanip>
using namespace std;

double population(double P,double B, double D){
    return  P*(1 + B)*(1 - D);
}
double update_population(double initialP,int y){
    static int arrivals,departures;
    do{
        cout<<"How many people move into this area in year "<<y<<" ? ";
        cin>>arrivals;
    }while(arrivals<0);
    do{
        cout<<"How many people leave this area in year "<<y<<" ? ";
        cin>>departures;
    }while(departures<0);
    return initialP+arrivals-departures;
}
int main(){
    double start_size;
    static double birth_rate,death_rate,years;
    do{
        cout<<"How many years from now do u want to know about the population? ";
        cin>>years ;
    }while(years<1);
    do{
        cout<<"The starting size of a population : ";
        cin>>start_size ;
    }while(start_size<2);
    do{
        cout<<"The annual birth rate : ";
        cin>>birth_rate ;
    }while ( birth_rate<0);
    do{
        cout<<"The annual death rate : ";
        cin>>death_rate ;
    }while ( death_rate<0);
    int y=1;double Newpopulation=start_size;
    while(years--){
        Newpopulation=population(Newpopulation,birth_rate,death_rate);
        Newpopulation=update_population(Newpopulation,y);
        y++;
    }
    cout<<"The population will be "<<int(Newpopulation)
    <<" after "<<y-1<<" years."<<endl;
    return 0;
}
```

```
"C:\Users\User\Desktop\作業\C++ HW3\6.exe"
How many years from now do u want to know about the population? 2
The starting size of a population : 100
The annual birth rate : 0.6
The annual death rate : 0.1
How many people move into this area in year 1 ? 30
How many people leave this area in year 1 ? 10
How many people move into this area in year 2 ? 15
How many people leave this area in year 2 ? 5
The population will be 246 after 2 years.

Process returned 0 (0x0)   execution time : 24.568 s
Press any key to continue.
```