```cpp
#include <iostream>
#include<limits>
#include <iomanip>//presicion
#include <random>
#include <chrono>

using namespace std;

void menu(){
    cout<<"\tSeleccione una opcion:"<<endl;
    cout<<"a) Tamaño y rangos de los Tipos de Dato Primitivos"<<endl;
    cout<<"b) Ejemplo de uso de Tipo de dato Estructurado"<<endl;
    cout<<"c) Salir\n"<<endl;

}
int TiposDatosPrimitivos(){
    cout<<"\n  Tipo de dato              Bits       Valor minimo           Valor maximo"
<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Caracter Con Signo           "<<sizeof(signed char)*8<<"            "<<
SCHAR_MIN<<"                   "<<SCHAR_MAX<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Caracter Sin Signo           "<<sizeof(unsigned char)*8<<"              0
                  "<<UCHAR_MAX<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Entero Corto Con Signo       "<<sizeof(signed short int)*8<<"          "
<<std::numeric_limits<signed short int>::min()<<"                  "<<std::numeric_limits
<signed short int>::max()<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Entero Corto Sin Signo       "<<sizeof(unsigned short int)*8<<"
  "<<std::numeric_limits<unsigned short int>::min()<<"                    "<<std::
numeric_limits<unsigned short int>::max()<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Entero Largo Con Signo       "<<sizeof(signed long int)*8<<"        "<<
std::numeric_limits<signed long int>::min()<<"             "<<std::numeric_limits<signed
long int>::max()<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Entero Largo Sin Signo       "<<sizeof(unsigned long int)*8<<"
 "<<std::numeric_limits<unsigned long int>::min()<<"                   "<<std::
numeric_limits<unsigned long int>::max()<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Real De Precision Simple     "<<sizeof(float)*8<<"         "<<std::
numeric_limits<float>::min()<<"            "<<std::numeric_limits<float>::max()<<endl;
    cout<<
"--------------------------------------------------------------------------------"<<endl
;
    std::cout<<"Real De Doble Precision      "<<sizeof(long double)*8<<"        "<<std::
numeric_limits<long double>::min()<<"          "<<std::numeric_limits<long double>::max
()<<endl;
    cout<<
"--------------------------------------------------------------------------------\n"<<
endl;
```

```
    return 0;
}

int TipoDatosEstructurado(int N){
    int i,j,a;
    float sum, A[N][N], B[N][N], C[N][N], D[N][N];

    std::default_random_engine generator(clock());
    std::uniform_real_distribution<double> distribution(-100.00,100.00);

    for(i=0;i<N;i++){//Llenado
        for(j=0;j<N;j++){
            A[i][j]= distribution(generator);
            B[i][j]= distribution(generator);
        }
    }

    for(a=0;a<N;a++){//Producto de matrices para C
        for(i=0;i<N;i++){
            sum=0;
            for(j=0;j<N;j++){
                sum=sum+(A[a][j]*B[j][i]);
            }
            C[a][i]=sum;
        }
    }
    for(i=0;i<N;i++){//Suma de matrices
        for(j=0;j<N;j++){
            D[i][j]= A[i][j] + B[i][j];
        }
    }
    cout<<"\tMatriz A"<<endl;
    for(i=0;i<N;i++){
        for(j=0;j<N;j++){
            cout<<setprecision(2)<<fixed<<A[i][j]<<"   ";
        }
        cout<<"\n";
    }
    cout<<"\n\tMatriz B"<<endl;
    for(i=0;i<N;i++){
        for(j=0;j<N;j++){
            cout<<setprecision(2)<<fixed<<B[i][j]<<"   ";
        }
        cout<<"\n";
    }
    cout<<"\n\tMatriz C"<<endl;
    for(i=0;i<N;i++){
        for(j=0;j<N;j++){
            cout<<setprecision(2)<<fixed<<C[i][j]<<"   ";
        }
        cout<<"\n";
    }
    cout<<"\n\tMatriz D"<<endl;
    for(i=0;i<N;i++){
        for(j=0;j<N;j++){
            cout<<setprecision(2)<<fixed<<D[i][j]<<"   ";
        }
        cout<<"\n";
    }
    cout<<"\n";

    return 0;
}

int main(int argc, char** argv) {
    int N;
```

```
    char opcMenu;
    do{
        menu();
        cin>>opcMenu;
        if(opcMenu=='a'){
            TiposDatosPrimitivos();

        }
        else if(opcMenu=='b'){
            do{
            cout<<"Tamaño de matriz (3 a 10): "<<endl;
            cin>>N;
            }while((N<3)||(N>10));
            TipoDatosEstructurado(N);

        }
    }while(opcMenu!='c');
    cout<<"Fin del programa\n"<<endl;
    return 0;
}
```