

Lab # 03  
Object oriented programming.  
11/01/2022

**Sample code:**

```
1  #include <iostream>
2  using namespace std;
3
4  class Car {          // The class
5  private:
6
7      string brand;    // Attribute
8      string model;    // Attribute
9      int year;        // Attribute
10 public:
11
12     Car(string x, string y, int z) { // Constructor with parameters
13         setBrandName(x);
14         setModel(y);
15         setYear(z);
16     }
17     void setBrandName(string b)
18     {
19         brand = b;
20     }
21     string getBrandName()
22     {
23         return brand;
24     }
25     void setModel(string y)
26     {
27         model = y;
28     }
29     string getModel()
30     {
31         return model;
32     }
33     void setYear(int z)
34     {
35         year = z;
36     }
37     int getYear()
38     {
39         return year;
40     }
41 };
42
```

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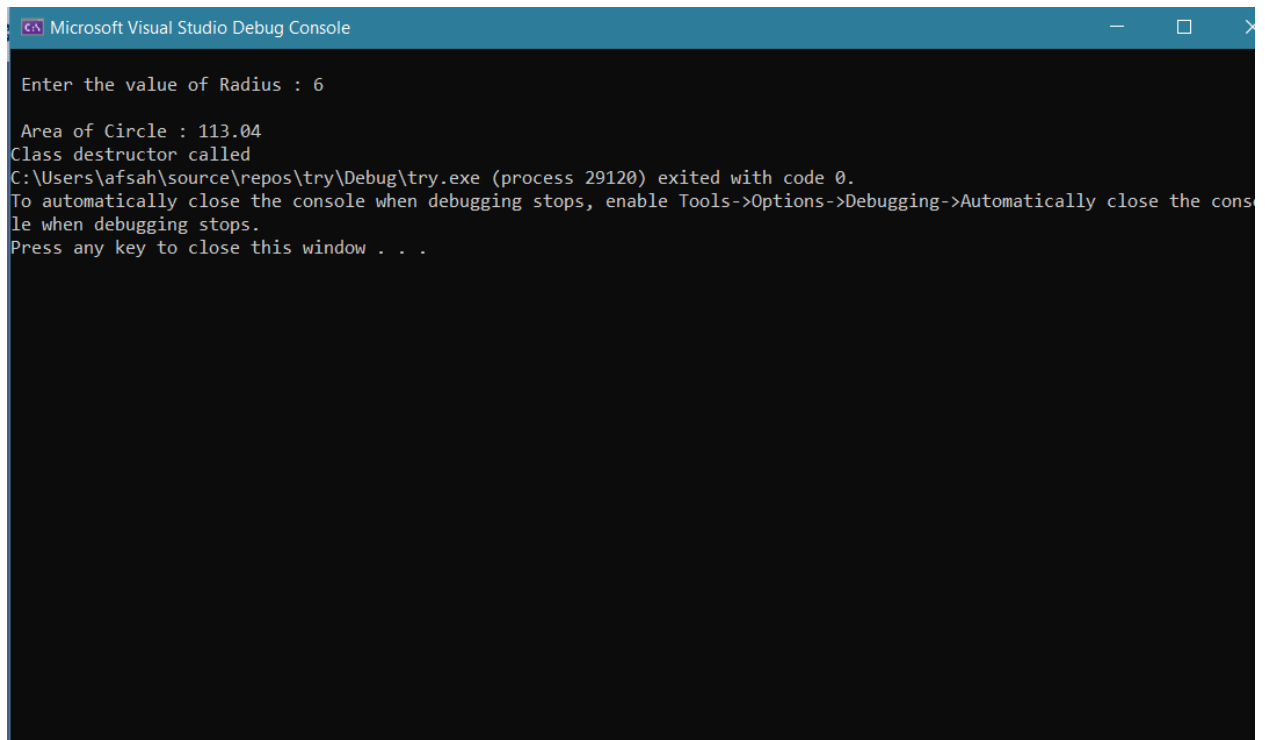
```
42
43 int main() {
44     string brand, model;
45     int year;
46     // Create Car objects and call the constructor with different values
47     Car carObj1("BMW", "X5", 1999);
48     Car carObj2("Ford", "Mustang", 1969);
49
50     // Print values
51     cout << carObj1.getBrandName() << " " << carObj1.getModel() << " " << carObj1.getYear() << "\n";
52     cout << carObj2.getBrandName() << " " << carObj2.getModel() << " " << carObj2.getYear() << "\n\n";
53
54     //get values
55     cout<< "Enter brand: ";
56     cin >> brand;
57
58     cout << "Enter model: ";
59     cin >> model;
60
61     cout << "Enter year: ";
62     cin >> year;
63
64     Car carObj3(brand, model, year);
65     cout<< carObj3.getBrandName() << " " << carObj3.getModel() << " " << carObj3.getYear();
66
67     return 0;
68 }
69
```

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**Task#01**

Create a circle class with:

- a. A constructor in which the user is asked to enter the value of radius.
- b. Have two functions "area" and "display" (to calculate area of circle and print final answer) defined outside of class.
- c. A destructor to destroy object.

A screenshot of the Microsoft Visual Studio Debug Console window. The window has a blue title bar with the text "Microsoft Visual Studio Debug Console" and standard window controls. The console area is black with white text. The text in the console reads: "Enter the value of Radius : 6", "Area of Circle : 113.04", "Class destructor called", "C:\Users\afsah\source\repos\try\Debug\try.exe (process 29120) exited with code 0.", "To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.", and "Press any key to close this window . . .".

```
Microsoft Visual Studio Debug Console

Enter the value of Radius : 6

Area of Circle : 113.04
Class destructor called
C:\Users\afsah\source\repos\try\Debug\try.exe (process 29120) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

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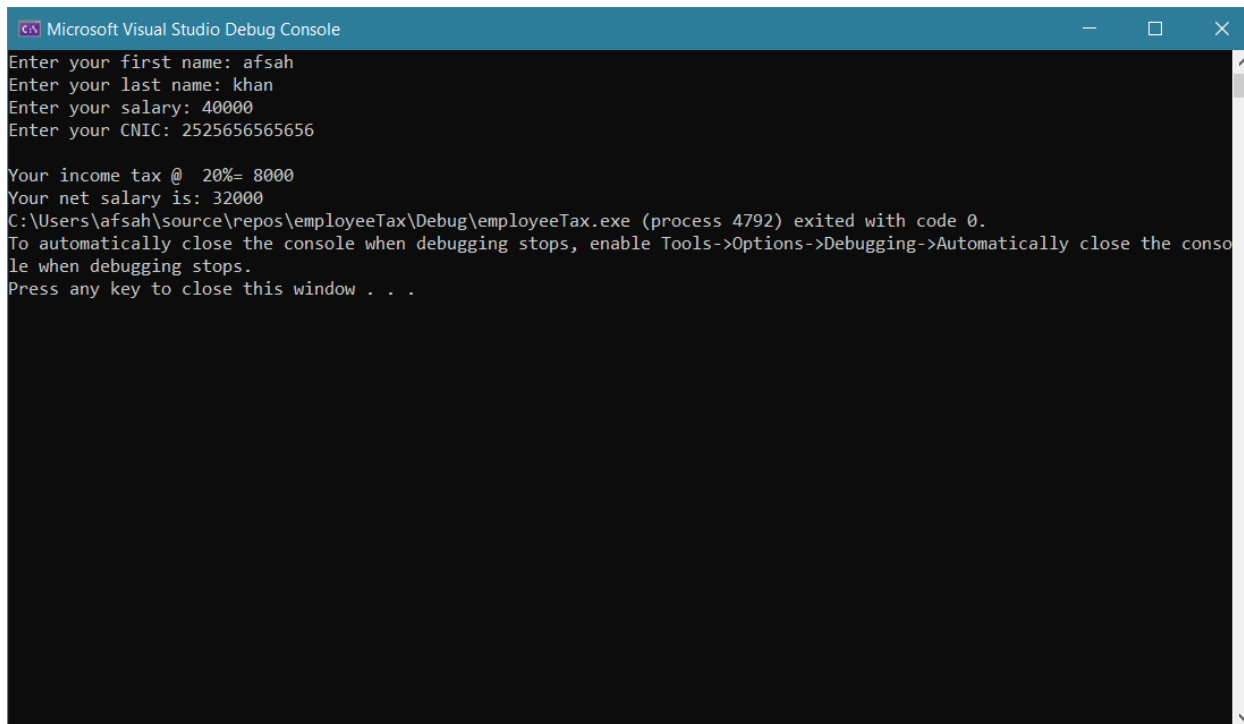
## **Task#02**

Write a Employee class that:

- a. Takes employee first name, last name.
- b. Employee CNIC number having 10 digits if not the program should end up with an error message.
- c. Take employee salary and deduce income tax from it and display the final salary.
- d. All data members must be private.
- e. Have a default constructor which outputs text like "no name entered".
- f. Constructor that initializes values of attributes.
- g. Use getter and setter functions to access private attributes.

**If salary is greater then 30,000 then there will 20 percent tax deduction.**

**If salary is greater then 20,000 then tax will be 10 percent .**



```
Microsoft Visual Studio Debug Console
Enter your first name: afsah
Enter your last name: khan
Enter your salary: 40000
Enter your CNIC: 2525656565656

Your income tax @ 20%= 8000
Your net salary is: 32000
C:\Users\afsah\source\repos\employeeTax\Debug\employeeTax.exe (process 4792) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

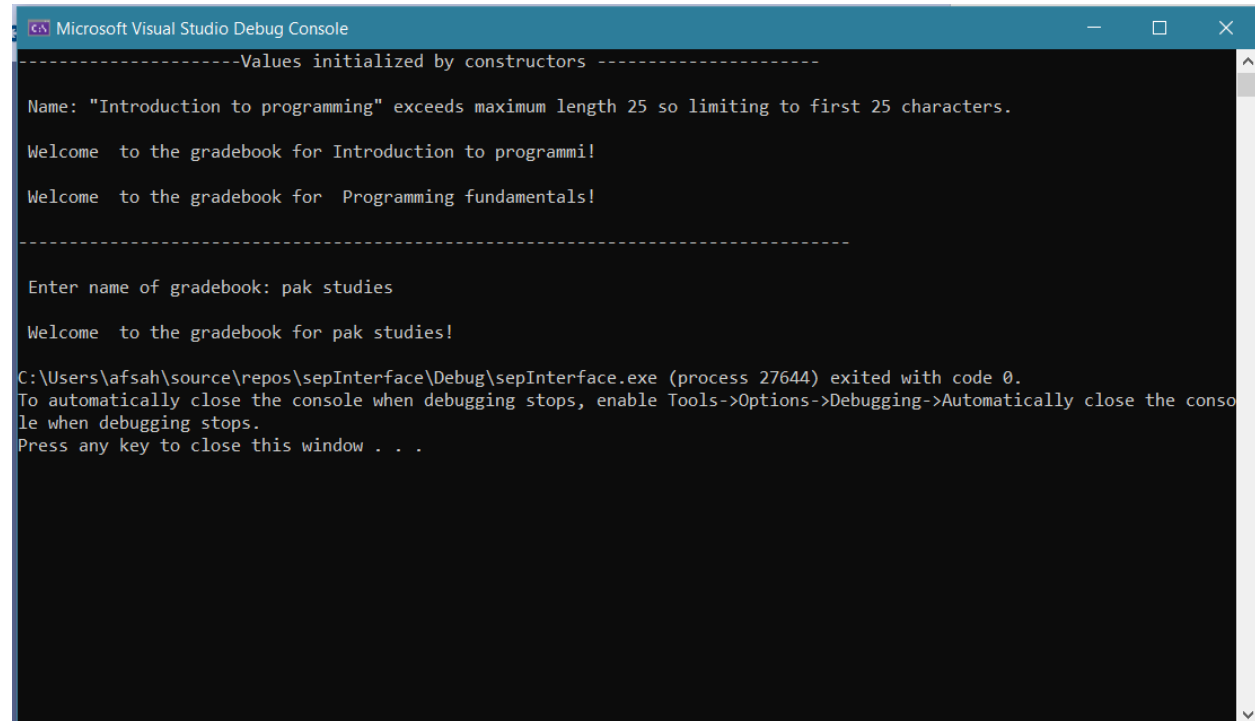
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**Task#03**

Write a GradeBook class which takes name of course from user and checks if string length is 25 or fewer then display name else if greater then 25 then cut it off to first 25 characters.

- a. Separate interface from implementation.
- b. Constructor to initialize object.
- c. Input subject names.
- d. Use getter setter functions.

**Hint:**use `substr(0,25)` to display the first 25 characters of string.



```
Microsoft Visual Studio Debug Console

-----Values initialized by constructors -----

Name: "Introduction to programming" exceeds maximum length 25 so limiting to first 25 characters.

Welcome to the gradebook for Introduction to programmi!

Welcome to the gradebook for Programming fundamentals!

-----

Enter name of gradebook: pak studies

Welcome to the gradebook for pak studies!

C:\Users\afsah\source\repos\sepInterface\Debug\sepInterface.exe (process 27644) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

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**Task#04**

Draw a class diagram for the customer of the bank where the program takes customer id, name, address, phone number and account number. Customers can have a general inquiry of account, can deposit money, withdraw money, open an account, close account, apply for a loan and request card.