**Object Oriented Programming**

**Lab 2**

**Submitted To:**

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**In Lab:**

**Task 1:**

**Write a class that displays a simple message “I am object no. \_\_”, on the screen whenever an object of that class is created.**

**Code:**

1 #include <iostream>

2

3 **using namespace std**;

4

5 **class** object\_counter

6 {

7 **private**:

8 **static int count**;

9 **public**:

10 object\_counter()

11 {

12 **count**++;

13 **cout** << "I am object no." << **count** << **endl**;

14 };

15 };

16

17 **int** object\_counter::**count**=0;

18

19 **int** main()

20 {

21 object\_counter obj1, obj2, obj3, obj4;

22

23 return 0;

24 }

**Output:**



**Task 2:**

**Create a class that imitates part of the functionality of the basic data type int, call the class Int. The only data in this class is an integer variable. Include member functions to initialize an Int to zero, to initialize it to an integer value and to display it. Write a program that exercises this class by creating an Int variable and calling its member functions.**

**Code:**

1 #include <iostream>

2

3 **using namespace std**;

4

5 **class** Int

6 {

7 **int** data;

8

9 **public**:

10

11 **void** initialize\_zero(){ data=0; }

12 **void** initialize\_value(**int** val){ data=val; }

13 **void** display() {**cout** << data << **endl** << **endl**; }

14 };

15 **int** main()

16 {

17 Int i1, i2;

18

19 **cout** << "Object 1 initialized as zero and displayed: " << **endl**;

20 i1.initialize\_zero();

21 i1.display();

22

23 cout << "Object 2 initialized with a constant and displayed: " << endl;

24 i2.initialize\_value(4);

25 i2.display();

26

27 return 0;

28 }

**Output:**

****

**Post Lab:**

**Task 1:**

**Write a program to calculate the number of objects created and destroyed for the counter class.**

**Code:**

1 #include <iostream>

2

3 **using namespace std**;

4

5 **class** counter

6 {

7 **private**:

8 **static int** count\_created, count\_destroyed;

9 **public**:

10

11 counter()

12 {

13 count\_created++;

14 **cout** << "Number of objects created= " << count\_created << **endl**;

15 };

16

17 ~counter()

18 {

19 count\_destroyed++;

20 **cout** << "Number of objects destroyed= " << count\_destroyed << **endl**;

21 };

22 };

23

24 int counter::count\_created=0, counter::count\_destroyed=0;

25

26 int main()

27 {

28 counter obj1;

29

30 for(int i=2; i<=5; i++)

31 {

32 counter obj;

33 cout << "Iteration no. " << i << endl;

34 }

35

36 return 0;

37 }

**Output:**

****

**Task 2:**

**Create a class named time, the data members are hours, minutes and seconds. Write a function to read the data members supplied by the user, write a function to display the data members in standard (24) hour and also in (12) hour format.**

**Code:**

1 #include <iostream>

2 #include <string.h>

3

4 **using namespace std**;

5

6 **class** time

7 {

8 **int** hour, minutes, seconds;

9 **string** meridiem;

10 **string** str1=("am");

11 **string** str2=("pm");

12

13 **public**:

14

15 **void** get\_time()

16 {

17 **cout** << "Enter hour: " << **endl**;

18 **cin**>> hour;

19

20 **cout** << "Enter minutes: " << **endl**;

21 **cin**>> minutes;

22

23 **cout** << "Enter seconds: " << **endl**;

24 cin>> seconds;

25

26 cout << "Enter meridiem: " << endl;

27 cin>> meridiem;

28 }

29

30 void set\_time(int h, int m, int s, string mer)

31 {

32 hour=h;

33

34 minutes=m;

35

36 seconds=s;

37

38 meridiem=mer;

39 }

40

41 void display()

42 {

43 cout << "Time in 12-hour format: " << endl;

44 cout << hour << ":" << minutes << ":" << seconds << " " << meridiem << endl;

45

46 cout << "Time in 24-hour format: " << endl;

47

48 if(meridiem==str1 )

49 {

50 if(hour==12)

51 cout << "00" << ":" << minutes << ":" << seconds << " " << meridiem << endl;

52 else

53 cout << hour << ":" << minutes << ":" << seconds << " " << meridiem << endl;

54 }

55 else if(meridiem==str2 )

56 {

57 if(hour==12)

58 cout << hour << ":" << minutes << ":" << seconds << " " << meridiem << endl;

59 else

60 cout << hour+12 << ":" << minutes << ":" << seconds << " " << meridiem << endl;

61 }

62

63 }

64

65 };

66

67 int main()

68 {

69 time t1, t2;

70

71 cout << "Enter Time in 12-hour format: " << endl;

72 t1.get\_time();

73 t1.display();

74

75 cout << endl;

76 cout << "Time set as: " << endl;

77 t2.set\_time(12,34,54,"am");

78 t2.display();

79

80 return 0;

81 }

**Output:**

****

**Task 3:**

**Write a class marks with three data members to store three marks. Write three member functions, set\_marks( ) to input marks, sum( ) to calculate and return the sum and avg( ) to calculate and return average marks.**

**Code:**

1 #include <iostream>

2

3 **using namespace std**;

4

5 **class** marks

6 {

7 **float** marks1, marks2, marks3, sum, avg;

8

9 **public**:

10

11 **void** set\_marks(**float** a, **float** b, **float** c){ marks1=a; marks2=b; marks3=c; }

12 **float** sum\_marks(){ sum=marks1+marks2+marks3; **return** sum;}

13 **float** avg\_marks() {**return** sum/3; }

14 };

15 **int** main()

16 {

17 marks m1;

18

19 **cout** << "Marks Stored!! " << **endl**;

20 m1.set\_marks(45.5,56.4,78.3);

21

22 cout << "Sum: " << endl;

23 cout << m1.sum\_marks() << endl;

24

25 cout << "Average: " << endl;

26 cout << m1.avg\_marks() << endl;

27

28 return 0;

29 }

30

**Output:**

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**THE END**