

TRINITY INTERNATIONAL COLLEGE

Dillibazar Height, Kathmandu

(Tribhuvan University Affiliated)



Lab 3

(Subject :Object Oriented Programming)

Submitted By:

Submitted To:

Name : Bijay Shrestha
Program : BSc CSIT
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Satya Bahadur Maharjan

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Assignment 3 (C++)

- i) Write a function called `hms_to_secs()` that takes three `int` values—for hours, minutes, and seconds—as arguments, and returns the equivalent time in seconds (type `long`). Create a program that exercises this function by repeatedly obtaining a time value in hours, minutes, and seconds from the user (format `12:59:59`), calling the function, and displaying the value of seconds it returns.
- ii) Write a function called `zeroSmaller()` that is passed two `int` arguments by reference and then return the smaller of the two numbers and set to zero. Write a `main()` program to exercise this function.
- iii) Write a function called `greater()` that is declaring two `int` global variables and entered using keyboard in `main` and return by reference the smaller of the two numbers and smaller as zero. Write a `main()` program to exercise this function.
- iv) Write a function that passes two temperatures by reference and sets the larger of the two numbers to 100 using return by reference. Write a `main()` program to exercise this function.
5 feet and 54 inches
- v) Create a structure and pass this by reference to a function `scale()` and calculate the distance by using scaling factor. Display the distance in feet and inches using `display()` function. Write a `main()` program to exercise this function.
- vi) Write a C++ program implementing inline function to find the area of circle.
- vii) Write a program using overloaded function named **`area()`** that can be used to compute the area of triangle, rectangle as well as circle.
- viii) Write a program to set a structure to hold a date (`mm`, `dd` and `yy`), assign values to the members of the structure and print out the values in the format `11/28/2020` by function. Pass the structure to the function.
- ix) Write a program to set a structure to hold feet and inches, assign values to the members of the structure and print out the values in the format `4' 10"` by function. Pass the structure to the function. [Note: if inch is greater than 12, covert it into feet]
- x) Write a recursive c++ program to find the factorial of entered number.
- xi) Write a recursive c++ program to print the Fibonacci series of N^{th} number.

LAB 3

Q1)

```
#include <iostream>
using namespace std;
int hms_to_sec(int hr, int min, int sec) {
    int seconds = 0;
    second = (hr * 60 * 60) + (min * 60) + sec;
    return seconds;
}
int main() {
    int hr, min, sec;
    cout << "enter hrs, mins & secs ";
    cin >> hr >> min >> sec;
    int result = hms_to_sec(hr, min, sec);
    cout << "total seconds = " << result;
    return 0;
}
```

Output

enter hrs , mins & secs 5

55

55

total seconds = 21355

(Q2)

```
#include <iostream>
using namespace std;
int &zero_small(int &a, int &b) {
    if (a < b)
        return a;
    else return b;
}

int main() {
    int n, y;
    cout << "enter two nums ";
    cin >> n >> y;
    zero_small(n, y) = 0;
    cout << "1st num" << n;
    cout << "\n 2nd num" << y;
    return 0;
}
```

Output

enter two nums 3

5

1st num 0

2nd num 5

Q 3)

```
#include <iostream>
using namespace std;
int n, y;
int & great (int &a, &int &b) {
    if (a < b)
        return a;
    else return b;
}
int main() {
    cout << "enter two nums";
    cin >> n, y;
    great (n, y) = 0;
    cout << "1st num" << n;
    cout << "2nd num" << y;
    return 0;
}
```

Output

enter two nums 7

5

1st num 7

2nd num 0.

Q4)

```
#include <iostream>
```

```
using namespace std;
```

```
int n, y;
```

```
int &grt_temp(int &n, int &y) {
```

```
if (n > y)
```

```
return n;
```

```
else return y;
```

```
}
```

```
int main() {
```

```
cout << "enter two temp.";
```

```
cin >> n >> y;
```

```
grt_temp(n, y) = 100;
```

```
if (n == 100)
```

```
cout << "higher temp." << n << "lower temp." << y;
```

```
else
```

```
cout << "higher temp." << y << "lower temp." << n;
```

```
return 0;
```

```
}
```

Output

Enter two temp 18

20

higher temp = 100 lower temp = 18.

Q5)

```
#include <iostream>
```

```
using namespace std;
```

```
struct length {
```

```
int feet, inches ft, in;
```

```
} ln;
```

```
int &display(length &ln) {
```

```
cout << "the length is " << ln.ft << "ft" << ln.in << "in";
```

```
}
```

```
int &scale(length &ln) {
```

```
if (ln.in >= 12) {
```

```
ln.ft = ln.ft + (ln.in / 12);
```

```
ln.in = ln.in % 12;
```

```
}
```

```
display(ln);
```

```
}
```

```
int main() {
```

```
cout << "enter length in feet & inches";
```

```
cin >> ln.ft >> ln.in;
```

```
scale(ln);
```

```
return 0;
```

```
}
```

Output

enter length in feet & inches 5

45

The length is 9ft 9in

Q6)

```
#include <iostream>
using namespace std;
inline float area(float r)
{
    return 3.1415 * r * r;
}
int main()
{
    float r;
    cout << "enter radius";
    cin >> r;
    cout << "area of circle" << area(r);
    return 0;
}
```

Output

enter radius 5
area of circle 78.5375

Q7)

```
#include <iostream>
using namespace std;
int area(int l, int b) {
    return (l * b);
}
float area(float r) {
    return (3.14 * r * r);
}
float area(float bs, float ht) {
    return ((ht * bs) / 2);
}
int main() {
    int s, l, b;
    float r, bs, ht;
    cout << "enter length & breadth of rectangle ";
    cin >> l >> b;
    cout << "enter radius of circle ";
    cin >> r;
    cout << "enter base & height of triangle ";
    cin >> bs >> ht;
    cout << "\n area of rectangle is " << area(l, b);
    cout << "\n area of circle is " << area(r);
    cout << "\n area of triangle is " << area(bs, ht);
}
```

Output

enter length & breadth of rectangle 4

5

enter radius of circle 3

enter base & height of triangle 3

5

area of rectangle is 20

area of circle is 28.26

area of triangle is 7.5.

Q8)

```
#include <iostream>
using namespace std;
struct date {
    int mm, dd, yy;
} dt;
int display (date dt) {
    cout << dt.mm << "/" << dt.dd << "/" << dt.yy;
}
int main () {
    cout << "enter months, day & year";
    cin >> dt.mm >> dt.dd >> dt.yy;
    display (dt);
}
```

Output

enter months, days & year 10

01

2002

10/1/2002

(85)

```
#include <iostream>
using namespace std;
struct length {
    int ft, in;
} ln;
int &scale(length &ln) {
    if (ln.in >= 12) {
        ln.ft = ln.ft + (ln.in / 12);
        ln.in = ln.in % 12;
    }
    cout << "The length is " << ln.ft << " ' " << ln.in << " ' ' ";
}
int main () {
    cout << "enter length in feet & inches ";
    cin >> ln.ft >> ln.in;
    scale(ln);
}
```

Output

enter length in feet & inches 4

54

The length is 8' 6"

Q10)

```
#include <iostream>
using namespace std;
int fact(int n) {
    if (n == 0 or n == 1)
        return 1;
    else return n * fact(n-1);
}
int main () {
    int n;
    cout << "enter a num ";
    cin >> n;
    cout << "factorial = " << fact(n);
    return 0;
}
```

Output

enter a num 5
factorial = 120

Q11)

```
#include <iostream>
using namespace std;
int fibo (int n) {
    if (n <= 1)
        return n;
    return fibo(n-1) + fibo(n-2);
}
int main ()
{
    int n;
    cout << " enter a num:";
    cin >> n;
    cout << n << "th term = "; fibo(n);
    return 0;
}
```

Output

enter a num 7

7th term = 13