Chapter 6: User-Defined Functions I
Extra Programming Examples
Laboratory Exercises (1)

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1. An Example that uses the **cmath header file** and the **floor function**.

```
#include <iostream>
#include <cmath>
using namespace std;

int main()
{
    double x = 55.99, y;
    y = floor(x);
    cout<<y<<endl;
    return 0;
}
```

Note: Try other cmath functions such as ceil, pow, exp, etc

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2. An Example that uses the **cstdlib header file** and the **abs function**.

```
#include <iostream>
#include <cstdlib>
using namespace std;

int main()
{
    int x = -13, y;
    y = abs(x);
    cout<<y<<endl;
    return 0;
}
```

---

3. An Example that uses the **cctype header file** and the **abs function**.

```
#include <iostream>
#include <cctype>
using namespace std;

int main()
{
```

```
    int a;
    a = islower('A');
    cout<<a<<endl;
    return 0;
}
```

---

4. The command return a, b;

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

int return_function_example()
{
    int x = 5;
    int y = 9;
    return x,y;
}

int main()
{
    cout<<"the out of the above function is";
    cout<<return_function_example()<<endl;
    return 0;
}
```

Note: try **return y, x;** and see the difference.

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5. An example of a value-returning function: courseGrade

```
#include <iostream>
using namespace std;
char courseGrade(int score)
{
    switch(score/10)
    {
        case 0:
        case 1:
        case 2:
        case 3:
        case 4:
        case 5: return 'F';
        case 6: return 'D';
        case 7: return 'C';
        case 8: return 'B';
```

```
        case 9:
        case 10: return 'A';
        default: return 'X';
    }
}

int main()
{
    int grade;
    char x;
    cout<<"Enter a grade"<<endl;
    cin>>grade;
    x = courseGrade(grade);
    cout<<x<<endl;
    return 0;
}
```

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6. An example of a value-returning function: courseGrade using nested if and string header file.

```
#include <iostream>
#include<string>
using namespace std;

string courseGrade(int score)
{
    if (score <=100 and score >=95)
        return "A+";
    else if (score <95 and score >=90)
        return "A";
    else if (score <90 and score >=85)
        return "B+";
    else if (score <85 and score >=80)
        return "B";
    else if (score <85 and score >=75)
        return "C+";
    else if (score <75 and score >=70)
        return "C";
    else if (score <70 and score >=65)
        return "D+";
    else if (score <65 and score >=60)
        return "D";
    else if (score <60 and score >=0)
        return "F";
    else return "Error";
```

```
}

int main()
{
    int grade;
    string x;
    cout<<"Enter grade"<<endl;
    cin>>grade;
    x = courseGrade(grade);
    cout<<x<<endl;
    return 0;
}
```

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7. Write a C++ program that uses the function **larger** to determine the largest number from a set of 5 numbers

```
#include <iostream>
#include<string>
using namespace std;

double larger(double x, double y)
{
    if(x >= y)
        return x;
    else
       return y;
}

int main()
{
    int num, max;
    cout<<"Enter 5 numbers"<<endl;
    cin>>num;
    max = num;

    for(int i = 0; i < 5; i++)
    {
        cin>>num;
        max = larger(max, num);
    }

    cout<<"The larger number is: "<<max<<endl;
    return 0;
}
```