**Chapter 6: User-Defined Functions I**

**Extra Programming Examples**

**Laboratory Exercises (1)**

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

1. 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;

}

1. 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;

}

1. 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.

1. 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;

}

1. 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 <80 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;

}

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

#include <iostream>

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 < 4; i++)

{

cin>>num;

max = larger(max, num);

}

cout<<"The larger number is: "<<max<<endl;

return 0;

}