```
Script started on 2024-03-29 14:12:04-05:00 [TERM="xterm-256color" TTY="/dev/pts/0" COLUMNS="132" LINES="33"]
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ pwd
[?2004l
/home/jovyan/CS2/Lab/Lab_15
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ ls -la
[?2004l
total 24
drwxr-sr-x  3 jovyan users 4096 Mar 29 14:12 [0m[01;34m.[0m
drwxr-sr-x 17 jovyan users 4096 Mar 27 12:36 [01;34m..[0m
-rw-r--r--  1 jovyan users 1837 Mar 29 14:11 driver.cpp
drwxr-sr-x  2 jovyan users 4096 Mar 29 14:11 [01;34m.ipynb_checkpoints[0m
-rw-r--r--  1 jovyan users 1810 Mar 29 14:04 Rectangle.cpp
-rw-r--r--  1 jovyan users  709 Mar 29 14:00 Rectangle.h
-rw-r--r--  1 jovyan users    0 Mar 29 14:12 Sabin_Lab_15.log
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ cat -n
Rectangle.h
[?2004l
     1  #ifndef RECTANGLE_H
     2  #define RECTANGLE_H
     3
     4  class Rectangle{
     5
     6  private:
     7      int m_length{};
     8      int m_width{};
     9      int m_area{};
    10
    11  public:
    12      //Default constructor
    13      Rectangle();
    14      //Overloaded constructor
    15      Rectangle(int,int);
    16      //Accessors
    17      void get_length();
    18      void get_width();
    19      //Calculate the area
    20      void calculate_area(){m_area = m_length * m_width;}
    21      //Display info
    22      void display_info();
    23
    24      bool operator == (Rectangle& rhs);
    25      bool operator != (Rectangle& rhs);
    26      bool operator < (Rectangle& rhs);
    27      bool operator > (Rectangle& rhs);
    28      bool operator <= (Rectangle& rhs);
    29      bool operator >= (Rectangle& rhs);
    30      void operator ++ ();
    31      void operator -- ();
    32  };
    33
    34  #endif[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-
tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ cat -n Rectangle.cpp
[?2004l
     1
     2  #include "Rectangle.h"
     3  #include <iostream>
     4
     5  Rectangle::Rectangle(){
     6      m_length = 1;
     7      m_width = 1;
     8  }
     9  Rectangle::Rectangle(int len, int width){
    10      m_length = len;
    11      m_width = width;
    12  }
    13  void Rectangle::get_length(){
    14      int length{};
    15      std::cout << "Enter the length: ";
    16      std::cin >> length;
    17      m_length = length;
    18  }
    19  void Rectangle::get_width(){
    20      int width{};
    21      std::cout << "Enter the width: ";
    22      std::cin >> width;
    23      m_width = width;
    24  }
    25  void Rectangle::display_info(){
    26      std::cout << "Length: " << m_length << '\n' << "Width: " << m_width << '\n' << "Area: " << m_area << '\n';
    27  }
    28
    29  //Overloaded Operators
    30  bool Rectangle::operator == (Rectangle& rhs){
```

```
    31      bool isequal = false;
    32      if((m_length == rhs.m_length) && (m_width == rhs.m_width) && (m_area == rhs.m_area))
    33          isequal = true;
    34      return isequal;
    35  }
    36  bool Rectangle::operator != (Rectangle& rhs){
    37      bool notequal = false;
    38      if((m_length != rhs.m_length) || (m_width != rhs.m_width) || (m_area != rhs.m_area))
    39          notequal = true;
    40      return notequal;
    41  }
    42  bool Rectangle::operator < (Rectangle& rhs){
    43      bool lessThan = false;
    44      if(m_area < rhs.m_area)
    45          lessThan = true;
    46      return lessThan;
    47  }
    48  bool Rectangle::operator > (Rectangle& rhs){
    49      bool greaterThan = false;
    50      if(m_area > rhs.m_area)
    51          greaterThan = true;
    52      return greaterThan;
    53  }
    54  bool Rectangle::operator <= (Rectangle& rhs){
    55      bool lessThanOrEq = false;
    56      if(m_area <= rhs.m_area)
    57          lessThanOrEq = true;
    58      return lessThanOrEq;
    59  }
    60  bool Rectangle::operator >= (Rectangle& rhs){
    61      bool greaterThanOrEq = false;
    62      if(m_area >= rhs.m_area)
    63          greaterThanOrEq = true;
    64      return greaterThanOrEq;
    65  }
    66  void Rectangle::operator ++ (){
    67      m_length++;
    68      m_width++;
    69  }
    70  void Rectangle::operator -- (){
    71      m_length--;
    72      m_width--;
    73  }[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$
cat -n driver.cpp
[?2004l
     1  //Tyler Sabin
     2  //Section 004
     3  //Lab 15
     4  //In this lab we will overload operators and compare Rectangles
     5
     6  #include "Rectangle.h"
     7  #include <iostream>
     8
     9  int main(){
    10
    11      Rectangle rec1{};
    12      Rectangle rec2{};
    13      Rectangle rec3{7,23};
    14      Rectangle rec4{};
    15      Rectangle rec5{};
    16
    17      rec5 = rec3;
    18
    19      rec2.get_length();
    20      rec2.get_width();
    21      std::cout << '\n';
    22
    23      rec4.get_length();
    24      rec4.get_width();
    25      std::cout << '\n';
    26
    27      rec1.calculate_area();
    28      rec2.calculate_area();
    29      rec3.calculate_area();
    30      rec4.calculate_area();
    31      rec5.calculate_area();
    32
    33      std::cout << "Rec1: \n";
    34      rec1.display_info();
    35      std::cout << '\n';
    36      std::cout << "Rec2: \n";
    37      rec2.display_info();
    38      std::cout << '\n';
```

```
    39      std::cout << "Rec3: \n";
    40      rec3.display_info();
    41      std::cout << '\n';
    42      std::cout << "Rec4: \n";
    43      rec4.display_info();
    44      std::cout << '\n';
    45      std::cout << "Rec5: \n";
    46      rec5.display_info();
    47      std::cout << '\n';
    48
    49      if(rec3 == rec5){
    50          std::cout << "Rec3 & Rec5 are equal\n";
    51      }else{
    52          std::cout << "Rec3 & Rec5 are not equal\n";
    53      }
    54
    55      if(rec1 != rec4){
    56          std::cout << "Rec1 & Rec4 are not equal\n";
    57      }else{
    58          std::cout << "Rec1 & Rec4 are equal\n";
    59      }
    60
    61      if(rec3 >= rec5){
    62          std::cout << "Rec3 is greater than or equal to Rec5\n";
    63      }else{
    64          std::cout << "Rec3 is less than Rec5\n";
    65      }
    66
    67      if(rec5 <= rec1){
    68          std::cout << "Rec5 is less than or equal to rec1\n";
    69      }else{
    70          std::cout << "Rec5 is greater than rec1\n";
    71      }
    72
    73      if(rec1 < rec3){
    74          std::cout << "Rec1 is less than Rec3\n";
    75      }else{
    76          std::cout << "Rec1 is greater than Rec3\n";
    77      }
    78
    79      if(rec2 > rec5){
    80          std::cout << "Rec2 is greater than Rec5\n";
    81      }else{
    82          std::cout << "Rec5 is greater than Rec2\n";
    83      }
    84
    85
    86      return 0;
    87  }[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$
g++ -Wall =[K-Wextra -Werror driver.cpp Rectangle.cpp -o sweep
[?2004l
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ ./sweep
[?2004l
Enter the length: 5
Enter the width: 5

Enter the length: 5
Enter the width: 5

Rec1:
Length: 1
Width: 1
Area: 1

Rec2:
Length: 5
Width: 5
Area: 25

Rec3:
Length: 7
Width: 23
Area: 161

Rec4:
Length: 5
Width: 5
Area: 25

Rec5:
Length: 7
Width: 23
Area: 161
```

```
Rec3 & Rec5 are equal
Rec1 & Rec4 are not equal
Rec3 is greater than or equal to Rec5
Rec5 is greater than rec1
Rec1 is less than Rec3
Rec5 is greater than Rec2
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ ./sweep
[?2004l
Enter the length: 2
Enter the width: 3

Enter the length: 2
Enter the width: 1

Rec1:
Length: 1
Width: 1
Area: 1

Rec2:
Length: 2
Width: 3
Area: 6

Rec3:
Length: 7
Width: 23
Area: 161

Rec4:
Length: 2
Width: 1
Area: 2

Rec5:
Length: 7
Width: 23
Area: 161

Rec3 & Rec5 are equal
Rec1 & Rec4 are not equal
Rec3 is greater than or equal to Rec5
Rec5 is greater than rec1
Rec1 is less than Rec3
Rec5 is greater than Rec2
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ ./sweep
[?2004l
Enter the length: 6
Enter the width: 4

Enter the length: 3
Enter the width: 2

Rec1:
Length: 1
Width: 1
Area: 1

Rec2:
Length: 6
Width: 4
Area: 24

Rec3:
Length: 7
Width: 23
Area: 161

Rec4:
Length: 3
Width: 2
Area: 6

Rec5:
Length: 7
Width: 23
Area: 161

Rec3 & Rec5 are equal
Rec1 & Rec4 are not equal
Rec3 is greater than or equal to Rec5
Rec5 is greater than rec1
```

```
Rec1 is less than Rec3
Rec5 is greater than Rec2
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_15[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_15[00m$ exit
[?2004l
exit

Script done on 2024-03-29 14:13:23-05:00 [COMMAND_EXIT_CODE="0"]
```