```
Script started on 2023-09-27 11:49:24-05:00 [TERM="xterm" TTY="/dev/pts/5" COLUMNS=
mf98604@ares:~$ pwd
/home/students/mf98604
mf98604@ares:~$ cat meeting.info

Name: Philip May'r
Class: CSC121-001

Activity: To meet or not to meet? That is the question!
                  (Room Capacity Program)
Level: 10.5

Description: Determines the legality of an indoor meeting based on
             the meeting room's maximum and current occupancy load.

mf98604@ares:~$ show-code meeting.cpp


meeting.cpp:
```

```cpp
#include <iostream>
#include <string>
#include <cmath>
#include <ctype.h>

using namespace std;

constexpr streamsize INF_FLAG{numeric_limits<streamsize>::max()};

short get_numerical_input(string prompt)
{
    short input;
    while (true)
    {
        cin.clear();
        cout << prompt;

        while (!isdigit(cin.peek()) && cin.peek() != '\n')
        {
            cin.ignore();
        }

        if (isdigit(cin.peek()))
        {
            cin >> input;
        }

        cin.clear();
        cin.ignore(INF_FLAG, '\n');

        if (input < 1)
        {
            cout << "\nInput value must be greater than zero. "
                    "Please try again.\n";
            continue;
        }
        else
        {
            break;
        }
    }

    return input;
}

string set_modifier(double & occupancy_percent,
                    double & rounded_occupancy_percent,
                    string & modifier)
{
    if (rounded_occupancy_percent > occupancy_percent)
    {
        modifier = "just over ";
    }
    else if (rounded_occupancy_percent < occupancy_percent)
    {
        modifier = "nearly ";
    }

    return modifier;
}

double calculate_occupancy_percent(short & occupancy, short & capacity)
{
    return static_cast<double>(occupancy) / capacity * 100.0;
}

double calculate_rounded_occupancy_percent(double & occupancy_percent)
{
    return floor(occupancy_percent + 0.5);
}

int main(void)
{
    short capacity, occupancy;
    string prompt = "";
    bool yes = true;
    char yes_no;

    cout << "\n\t\tWelcome to the Room Capacity Program!!!\n";

    while(yes)
    {
        capacity = 0;
        occupancy = 0;

        prompt = "\nWhat is the room's maximum occupancy? ";
        capacity = get_numerical_input(prompt);
```

```
    88
    89          prompt = "\nWhat is the room's current occupancy? ";
    90          occupancy = get_numerical_input(prompt);
    91
    92          string modifier = "";
    93
    94          double occupancy_percent, rounded_occupancy_percent;
    95
    96          occupancy_percent =
    97          calculate_occupancy_percent(occupancy, capacity);
    98
    99          rounded_occupancy_percent =
   100          calculate_rounded_occupancy_percent(occupancy_percent);
   101
   102          modifier =
   103          set_modifier(occupancy_percent, rounded_occupancy_percent,
   104                       modifier);
   105
   106          cout << "\n\nThe room is at " << modifier
   107               << rounded_occupancy_percent << "% legal capacity!";
   108
   109          if (occupancy < capacity)
   110          {
   111              cout << "\n\nThe room has not reached maximum capacity; "
   112                      "therefore, the meeting is legal.";
   113              cout << "\n\nThere is still room for "
   114                   << (capacity - occupancy) << " more occupant(s).\n";
   115          }
   116          else if (occupancy == capacity)
   117          {
   118              cout << "\n\nThe room has not exceeded maximum capacity; "
   119                      "therefore, the meeting is legal.\n";
   120          }
   121          else
   122          {
   123              cout << "\n\nThe room has exceeded maximum capacity; "
   124                      "therefore, the meeting is illegal.";
   125              cout << "\n\nAt least " << occupancy - capacity
   126                   << " occupant(s) must leave the room.\n";
   127          }
   128
   129          cout << "\n\nWould you like to run the program again? "
   130                  "Enter yes/no: ";
   131
   132          cin >> yes_no;
   133          cin.ignore(INF_FLAG, '\n');
   134
   135          yes = (yes_no != tolower('y')) ? false : true;
   136      }
   137      cout << "\n\nThank you for trying out the RCP!!";
   138
   139      cout << "\n\nHave a bright day!\n\n";
   140  }
mf98604@ares:~$ CPP meeting
```

```
meeting.cpp***


mf98604@ares:~$ ./meeting.out

                Welcome to the Room Capacity Program!!!

What is the room's maximum occupancy? 50

What is the room's current occupancy? 48


The room is at 96% legal capacity!

The room has not reached maximum capacity; therefore, the meeting is legal.

There is still room for 2 more occupant(s).


Would you like to run the program again? Enter yes/no: y

What is the room's maximum occupancy? 100

What is the room's current occupancy? 112


The room is at nearly 112% legal capacity!

The room has exceeded maximum capacity; therefore, the meeting is illegal.

At least 12 occupant(s) must leave the room.


Would you like to run the program again? Enter yes/no: y

What is the room's maximum occupancy? 75

What is the room's current occupancy? 75


The room is at 100% legal capacity!

The room has not exceeded maximum capacity; therefore, the meeting is legal.


Would you like to run the program again? Enter yes/no: y

What is the room's maximum occupancy? 64

What is the room's current occupancy? 32


The room is at 50% legal capacity!
```

```
The room has not reached maximum capacity; therefore, the meeting is legal.

There is still room for 32 more occupant(s).

Would you like to run the program again? Enter yes/no: y

What is the room's maximum occupancy? fifty

Input value must be greater than zero. Please try again.

What is the room's maximum occupancy? 50

What is the room's current occupancy? twelve

Input value must be greater than zero. Please try again.

What is the room's current occupancy? 12

The room is at 24% legal capacity!

The room has not reached maximum capacity; therefore, the meeting is legal.

There is still room for 38 more occupant(s).

Would you like to run the program again? Enter yes/no: y

What is the room's maximum occupancy? one-hundred

Input value must be greater than zero. Please try again.

What is the room's maximum occupancy? 100

What is the room's current occupancy? ninety-nine

Input value must be greater than zero. Please try again.

What is the room's current occupancy? 99

The room is at 99% legal capacity!

The room has not reached maximum capacity; therefore, the meeting is legal.

There is still room for 1 more occupant(s).

Would you like to run the program again? Enter yes/no: yes

What is the room's maximum occupancy? 0

Input value must be greater than zero. Please try again.

What is the room's maximum occupancy? 50

What is the room's current occupancy? 2

The room is at 4% legal capacity!

The room has not reached maximum capacity; therefore, the meeting is legal.

There is still room for 48 more occupant(s).

Would you like to run the program again? Enter yes/no: n

Thank you for trying out the RCP!!

Have a bright day!

mf98604@ares:~$ cat meeting.tpq

Thought Provoking Questions - Lab 6 - Meeting

1.)

Room capacity and meeting attendance are integer data types.
A percentage is stored in a floating point type.

2.)

Three branches are required. One branch for when occupancy is less than capacity,
one for when occupancy is equal to capacity,
and one for when occupancy is greater than capacity.

3.)

Three tests are required, one for each branch.

4.)

The rounding formula is floor(value + 0.5).

mf98604@ares:~$ exit
exit

Script done on 2023-09-27 11:51:31-05:00 [COMMAND_EXIT_CODE="0"]
```