CIS 657: Operating Systems

Lab Assignment 3

Date: 3/3/2019, Spring 2019

Submitted by,
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CIS657 Spring 2019

Assignment Disclosure Form

Assignment #: 3

Name: Kuchibhotla Lakshmi Harshini

1. Did you consult with anyone other than instructor or TA/grader on parts of this assignment?

If Yes, please give the details.

No

2. Did you consult an outside source such as an Internet forum or a book on parts of this assignment?

If Yes, please give the details.

No

I assert that, to the best of my knowledge, the information on this sheet is true.

Signature:___K.L.Harshini._____ Date : 3/3/2019

Design:

The design of the reservation system involves the following steps

1. Initializing the correct variables for simulated date, maximum simulated date. Also Initialize the different lists staying, confirmed, discarded.

2. For every day the following steps are performed by the Concierge thread.

    a. Check for guests who want to check-out, yield the CPU for them

    b. Check for guests who made a reservation for that day. Yield the CPU for them

    c. Create new guests

    d. Yield the CPU to the guest threads to run

3. When a new guest thread is created, the thread performs the following steps.

    a. Creates a new Guest class object. With randomly generated valid check-in date, checkout date and rooms required.

    b. The guest class object then makes a request. We then check the availability of rooms using a globally available bitmap object that keeps track of rooms

    c. The If rooms are not available on all the days requested by the guest he is pushed into the discarded list, and the thread is “Finished”. (kernel->currentThread->Finish())

    d. If rooms are available, then the Bitmap corresponding to those rooms is set.

    e. If the check-in date is the same as simulated date, push the guest into staying.

    Then put the current thread to “Sleep”

    f. If the check-in date is not the same as simulated date, push the guest into confirmed/reserved.

    Then put the current thread to “Sleep”

    g. Upon waking from confirmed, move the guest to staying and sleep again

    h. Also, upon waking the staying thread, Checkout the guest. Clear his reservation in bitmap on the day he is leaving.

    i. Upon finishing checkout, the thread is then “Finished”

4. At the end of the simulation, Checkout all the guests (Yield the CPU and relinquish control when they are done),

5. Print statistics like daily occupancy/vacancy rate and granted rate.

Implementation of the solution-Code:

guest.h

```
/*Author: Lakshmi Harshini Kuchibhotla, SU ID: 230997383, SU Mail:
lkuchibh@syr.edu
This is a .h file which contains all the declarations of the Guests i.e; info of
the
guests and the getter, setter functions for guest operations*/

#ifndef GUEST_H
#define GUEST_H

#include <string.h>
#include <stdlib.h>
#include "list.h"
#include "thread.h"

class Guest
{
    public:
        Guest(int uniqueid, int roomNumbers, int checkin, int checkout,
List<int>& roomsAllotted, std::string guestname, Thread* thread);
        int getuniqueId();
        int getroomNumbers();
        int getCheckIndate();
        int getCheckOutdate();
        List<int>& getAllottedRooms();
        std::string getguestName();
        Thread* getThread();
        void setAllottedRooms(List<int>& roomsAllotted);
    private:
        int uniqueid;
        int roomNumbers;
        int checkin;
        int checkout;
        List<int>& roomsAllotted;
        std::string guestname;
        Thread* thread;
};

#endif //this is to end the preceeding #if.
```

guest.cc

```
/*Author: Lakshmi Harshini Kuchibhotla, SU ID: 230997383, SU Mail:
lkuchibh@syr.edu
This is a .cc file which contains the definitions for the member functions
declared in .h file*/

//import guest.h
#include "guest.h"
#include <stdlib.h>

//constructor
Guest::Guest(int uniqueid, int roomNumbers, int checkin, int checkout, List<int>&
roomsAllotted, std::string guestname, Thread* thread)
:roomsAllotted(roomsAllotted)
{
    this->uniqueid = uniqueid;
    this->roomNumbers = roomNumbers;
    this->checkin = checkin;
    this->checkout = checkout;
    this->guestname = guestname;
    this->thread = thread;
}

//function to get the user id which is sequentially generated starting from 1
int
Guest::getuniqueId()
{
    return uniqueid;
}

//function to get the roomnumbers. roomnumbers are generateed randomly in the
range of 5
int
Guest::getroomNumbers()
{
    return roomNumbers;
}

//guest checkin date - randomly generated
int
Guest::getCheckIndate()
{
    return checkin;
}
```

```
//guest checkout date - randomly generated but this should be later than the
checkin date
int
Guest::getCheckOutdate()
{
    return checkout;
}

//list of allocated rooms - number of rooms requested by guest(generated
randomly)
List<int>&
Guest::getAllottedRooms()
{
    return roomsAllotted;
}

//guestname - some random name
std::string
Guest::getguestName()
{
    return guestname;
}

Thread*
Guest::getThread()
{
    return thread;
}

//sets the given allotted rooms - number requested by guest(randomly generated) -
rooms assigned by system
void
Guest::setAllottedRooms(List<int>& roomsAllotted)
{
    this->roomsAllotted = roomsAllotted;
}
```

threadtest.cc

```
/*Author: Lakshmi Harshini Kuchibhotla, SU ID: 230997383, SU Mail:
lkuchibh@syr.edu

This file contacins all the functionality and operations*/

#include "guest.h"
#include "kernel.h"
#include "main.h"
#include "thread.h"
#include "list.h"
#include "bitmap.h"
#include <string.h>
#include <sstream>
#include <iostream>
#include <vector>

//Thread* actualthread;
int id = 1;
int Days = 11;
int currentDate = 1;

Bitmap *TotalRooms[17];

SortedList<Guest*> *Stayinglist;
SortedList<Guest*> *Checkingoutlist;
SortedList<Guest*> *Confirmedlist;
SortedList<Guest*> *Discardedlist;

//function to convert an integer to string
std::string
Convert_IntTostring(int integer)
{
    std::ostringstream outputss;
    outputss << integer;
    return outputss.str();
}

//funtion sorts the guests by their check-in date
int
SortbyCheckIn(Guest* guest1, Guest* guest2)
{
    if(guest1->getCheckIndate() > guest2->getCheckIndate())
    {
        return 1;
```

```
    }
    return -1;
}

//function sorts the guests with respect to checkout dates
int
SortbyCheckOut(Guest* guest1, Guest* guest2)
{
    if(guest1->getCheckOutdate() > guest2->getCheckOutdate())
    {
        return 1;
    }
    return -1;
}

//function to display the list of room numbers allotted to each guest
void
DisplayRooms(int room)
{
    std::cout << room << endl;
}

//function checks the checkin date of every guest with the current date to move
guest to staying
void
GuestCheckinMatched(Guest* guest)
{
    if(guest->getCheckIndate() == currentDate)
    {
        kernel->scheduler->ReadyToRun(guest->getThread());
    }
}

//function checks the checkout date of every guest with current date to discard
the guest
void
GuestCheckedOut(Guest* guest)
{
    if(guest->getCheckOutdate() == currentDate)
    {
        kernel->scheduler->ReadyToRun(guest->getThread());
    }
}

//function checks out all the guests who are on staying on the last day(11th day)
```

```
void
AllGuestsCheckOut(Guest* guest)
{
    kernel->scheduler->ReadyToRun(guest->getThread());
}

//deletes the guest info who checkout the room
void
DeleteCheckedoutguest(Guest* guest)
{
    delete guest;
}

//After the guest checkedOut, this function makes the rooms available for next
guest request
void
CheckedoutRoomsAvailable(int rooms)
{
    TotalRooms[currentDate]->Clear(rooms);
}

//function displays all the available rooms after everyin rooms assigned
void
DisplayvacantRooms(int day)
{
    int i=0;
    while(i < 30)
    {
        if(!TotalRooms[day]-> Test(i))
        {
            std::cout<< i <<", ";
        }
        i++;
    }
}

//Displays the total info-guest id, name, checkin, checkout dates, no.of rooms
needed
void
DisplayGuestInfo(Guest* guest)
{
    std::cout <<endl<< "Guest: " << guest->getuniqueId() << "   |   Name: " <<
guest->getguestName()
            << "   |   No.of Rooms: " << guest->getroomNumbers() << "   |
Check-in date: "
```

```
            << guest->getCheckIndate() << "    |    Check-out date: " << guest-
>getCheckOutdate() << endl;
}

//used a bitmap for each day with 30 days. function matches the checkin date of
the guest and
//checks if room available as on that date to allot it for the guests
void
AssignRoomswithDate(int roomNumbers, int uniqueid, Guest* guest)
{
    std::vector<int> rooms;

    // Match for guest Checkin date
    if(TotalRooms[guest->getCheckIndate()] -> NumClear() < roomNumbers)
    {
        std::cout << endl << "Number of rooms requested are not available for the
given dates."<<endl;
        std::cout << "Hence Guest_"<< uniqueid<<" is added to the Discarded
list"<<endl;
        std::cout <<endl<<"--------------*********---------------"<<endl;
        Discardedlist->Insert(guest);
        kernel->currentThread->Finish();
        return;
    }
    for(int i=0; i<roomNumbers; i++)
    {
        int requestedroom = TotalRooms[guest->getCheckIndate()]-> FindAndSet();
        rooms.push_back(requestedroom);
    }

    //checks if same rooms are available for all the requested days
    for(int i = guest->getCheckIndate()+1; i < guest->getCheckOutdate()+1; i++)
    {
        for(int j=0; j<roomNumbers; j++)
        {
            bool roomvacant;
            roomvacant = !(TotalRooms[i] -> Test(rooms[j]));

            //if same rooms are not available for all days, guest id discarded
and he cannot be given the rooms
            if(!roomvacant)
            {
                std::cout << endl << "Number of rooms requested are not available
for the given dates."<<endl;
```

```
                std::cout << "Hence Guest_"<< uniqueid<<" is added to the
Discarded list"<<endl;
                std::cout <<endl<<"--------------*********---------------"<<endl;
                Discardedlist->Insert(guest);

                for(int k=0; k<roomNumbers; k++)
                {
                    TotalRooms[guest->getCheckIndate()] -> Clear(rooms[k]);
                }
                kernel->currentThread->Finish();
                return;
            }
        }
    }

    //if same rooms are available for all the needed days, guest is allotted the
rooms
    for(int i = guest->getCheckIndate()+1; i < guest->getCheckOutdate()+1; i++)
    {
        for(int j=0; j<roomNumbers; j++)
        {
            TotalRooms[i] -> Mark(rooms[j]);
        }
    }

    List<int> roomsAllotted;
    for(int i=0; i<roomNumbers; i++)
    {
        roomsAllotted.Append(rooms[i]);
    }
    guest->setAllottedRooms(roomsAllotted);
}

//creates threads for different operations
void
GuestThread(int number)
{
    //randomly generating the requestedrooms, checkin and checkout dates.
    int uniqueid = id;
    int requestedRooms = (rand() % 5) + 1;
    int checkinDate = (rand() % (Days - currentDate)) + currentDate;
    int checkoutDate = (rand() % 4) + 1 + checkinDate;
    std::string guestname = "Random_Guest_" + Convert_IntTostring(id);
    List<int> roomsAllotted;
```

```
    Guest* guest = new Guest(uniqueid, requestedRooms, checkinDate, checkoutDate,
roomsAllotted, guestname, kernel->currentThread);
    id++;
    std::cout<<endl<<"Guest_"<<uniqueid<< " Requested for rooms";
    std::cout<<endl<<"Checking if requested number of rooms are available for
guest: "<<endl;
    DisplayGuestInfo(guest);

    AssignRoomswithDate(requestedRooms, uniqueid, guest);

    std::cout<< "The rooms assigned for Guest_"<<uniqueid <<" are "<<endl;
    guest->getAllottedRooms().Apply(DisplayRooms);
    std::cout<< endl;
    std::cout<<endl<< "Rooms available after assigned as on guest checkin date:
"<<endl;
    DisplayvacantRooms(checkinDate);
    std::cout<<endl;

    //for every current date, checkin date is matched, corresponding guest is
moved to the staying list
    if(checkinDate == currentDate)
    {
        std::cout<<endl<< "Guest_"<<uniqueid <<" is added to staying list."<<
endl;
        std::cout <<endl<<"--------------*********---------------"<<endl;
        Stayinglist->Insert(guest);
        IntStatus oldLevel = kernel->interrupt->SetLevel(IntOff);
        kernel->currentThread->Sleep(false);
        kernel -> interrupt ->SetLevel(oldLevel);

        //for every match in current date, checkout date, corresponding guest is
removed from staying list
        //and his reserved rooms are made available

        std::cout<<endl<< "Guest_"<<uniqueid<< " Checked out." <<endl;
        DisplayGuestInfo(guest);
        std::cout <<endl<<"--------------*********---------------"<<endl;
        Stayinglist->Remove(guest);
        guest->getAllottedRooms().Apply(CheckedoutRoomsAvailable);
        std::cout<<endl<<"Rooms available after Guest_"<<uniqueid<< " Checked out
are: "<<endl;
        DisplayvacantRooms(currentDate);
        std::cout<<endl;
        kernel->currentThread->Finish();
        return;
```

```
    }

    //when the guest reserves the rooms for a future date, guest is put to
confirmed list
    else
    {
        std::cout<< "Guest_"<<uniqueid <<" is added to the confirmed
list."<<endl;
        std::cout <<endl<<"--------------*********---------------"<<endl;
        Confirmedlist->Insert(guest);
        IntStatus oldLevel = kernel->interrupt->SetLevel(IntOff);
        kernel->currentThread->Sleep(false);
        kernel -> interrupt ->SetLevel(oldLevel);

        //at a particular date, if the checkin date of the guest is matched and
the guest
        //is in confirmed list, guest will be moved to staying list
        if(Confirmedlist->IsInList(guest))
        {
            std::cout <<endl<< "Guest_"<<uniqueid <<" moved from confirmed to
staying list and the guest details are:"<<endl;
            DisplayGuestInfo(guest);
            std::cout <<endl<<"--------------*********---------------"<<endl;
            Stayinglist->Insert(guest);
            Confirmedlist->Remove(guest);
        }

        oldLevel = kernel->interrupt->SetLevel(IntOff);
        kernel->currentThread->Sleep(false);
        kernel -> interrupt ->SetLevel(oldLevel);

        std::cout<<"Following Guest is checked out." << endl;
        DisplayGuestInfo(guest);
        Stayinglist->Remove(guest);
        guest->getAllottedRooms().Apply(CheckedoutRoomsAvailable);
        std::cout<<endl<<"Rooms available after Guest_"<<uniqueid<< " Checked out
are: "<<endl;
        DisplayvacantRooms(currentDate);
        std::cout<<endl;
        std::cout <<endl<<"--------------*********---------------"<<endl;
        kernel->currentThread->Finish();

    }
```

```
}

//function calls the guest thread for multiple operations
void
ConciergeThread(int number)
{
    std::cout<<endl<<"-----------------------------------------"<<endl;
    std::cout<<endl<<"***** Hotel Reservation Tracker *****"<<endl;
    std::cout<<endl<<"-----------------------------------------"<<endl;
    while(currentDate <= Days)
    {
        std::cout<< endl;
        std::cout<< "***Current date = " << currentDate <<endl;
        std::cout<< endl << "Rooms available as on current date = ";
        DisplayvacantRooms(currentDate);
        std::cout<<endl;
        kernel -> interrupt ->SetLevel(IntOff);
        Stayinglist->Apply(GuestCheckedOut);
        kernel->currentThread->Yield();
        Confirmedlist->Apply(GuestCheckinMatched);
        kernel->currentThread->Yield();
        if(currentDate != Days)
        {
            for(int i=0; i<5; i++)
            {
                Thread *th = new Thread("Guest Thread");
                th->Fork((VoidFunctionPtr) GuestThread, (void*) 1);
            }
            kernel->currentThread->Yield();
        }
        currentDate++;
    }

    std::cout<< endl <<"Day 11 - Check out all the guests from the hotel" <<endl;
    kernel -> interrupt ->SetLevel(IntOff);
    Stayinglist->Apply(AllGuestsCheckOut);
    kernel->currentThread->Yield();

    std::cout<< endl <<"    Tracker Summary" << endl <<"-------------------------
-------------"<<endl;
    for(int i=1; i<Days+1; i++)
    {
        float dailyVacancy_Rate = ((float)TotalRooms[i] -> NumClear() /
(float)30)*100;
        std::cout << endl <<"**** Rates on Day: " << i << " ****" << endl;
```

```
        std::cout << endl <<" Vacancy Rate = " << dailyVacancy_Rate <<"\%"
<<endl;
        std::cout << "Occupancy Rate = "<< (100-dailyVacancy_Rate) << "\%"
<<endl;
    }

    float Granted_Rate = (float)Discardedlist -> NumInList() / (float)50 *100;
    std::cout << endl << "!!!!Total Granted Rate  = " << Granted_Rate << "\% " <<
endl;

    std::cout<<endl<<"-------------*****End of the Hotal Reservation
Tracker*****--------------"<<endl<<endl;

    Stayinglist->Apply(DeleteCheckedoutguest);
    Confirmedlist->Apply(DeleteCheckedoutguest);
    Checkingoutlist->Apply(DeleteCheckedoutguest);
    Discardedlist->Apply(DeleteCheckedoutguest);

    delete Stayinglist;
    delete Confirmedlist;
    delete Checkingoutlist;
    delete Discardedlist;

    delete kernel;
    exit(0);
}


//Function gets the control first and calls the conciergeThread when forked
void
ThreadTest()
{
    Stayinglist = new SortedList<Guest*> (SortbyCheckOut);
    Checkingoutlist = new SortedList<Guest*> (SortbyCheckOut);
    Confirmedlist = new SortedList<Guest*> (SortbyCheckIn);
    Discardedlist = new SortedList<Guest*> (SortbyCheckIn);

    for(int i=0; i<17; i++)
    {
        TotalRooms[i] = new Bitmap(30);
    }

    Thread *t = new Thread("Concierge Thread");
    t->Fork((VoidFunctionPtr) ConciergeThread, (void *) 1);
}
```

Testing

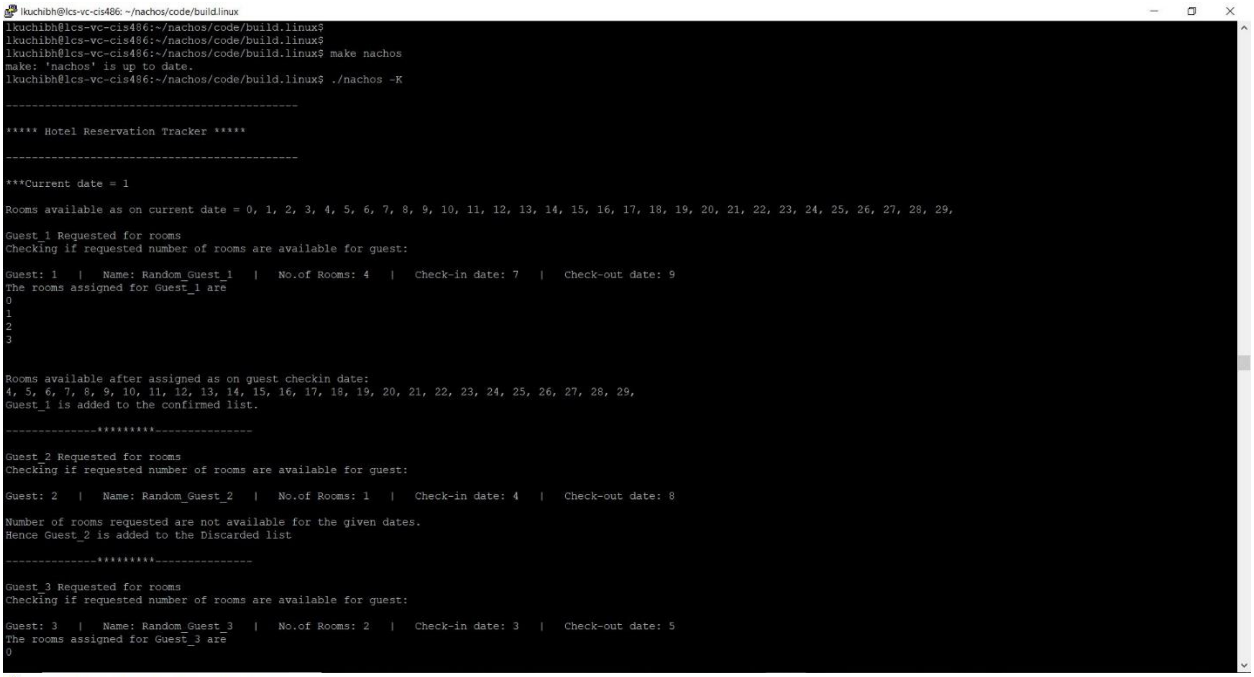
1.Connect to the VM.

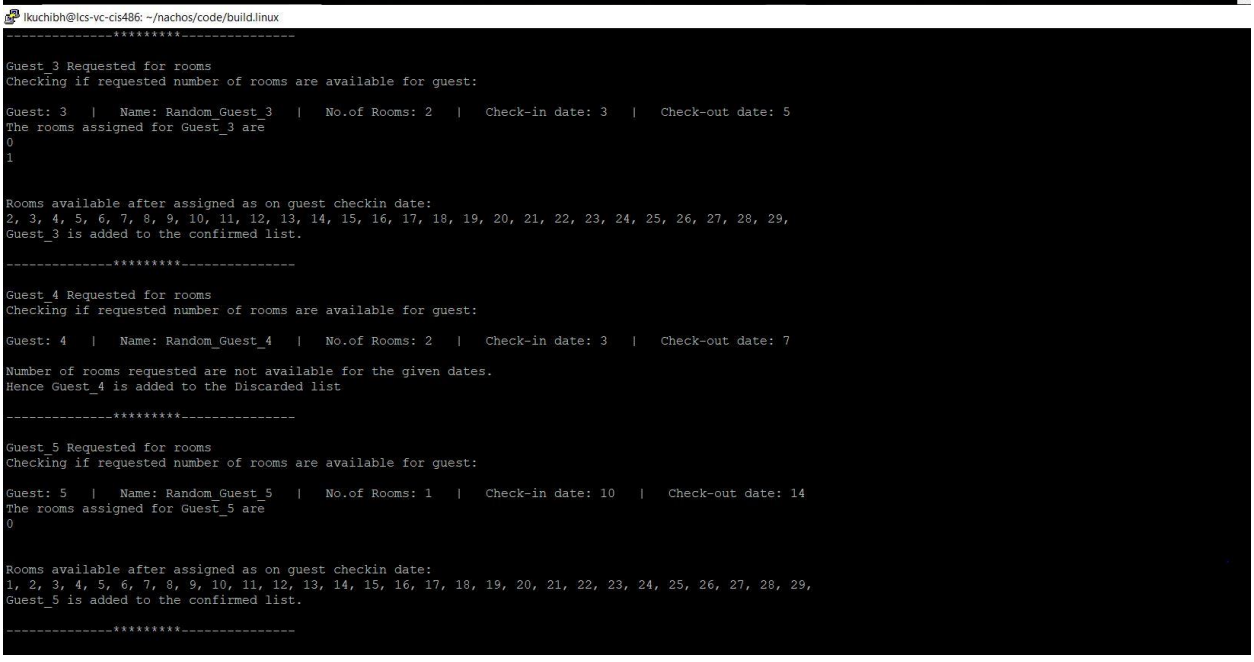
2.Enter make nachos in nachos/code/build.linux.

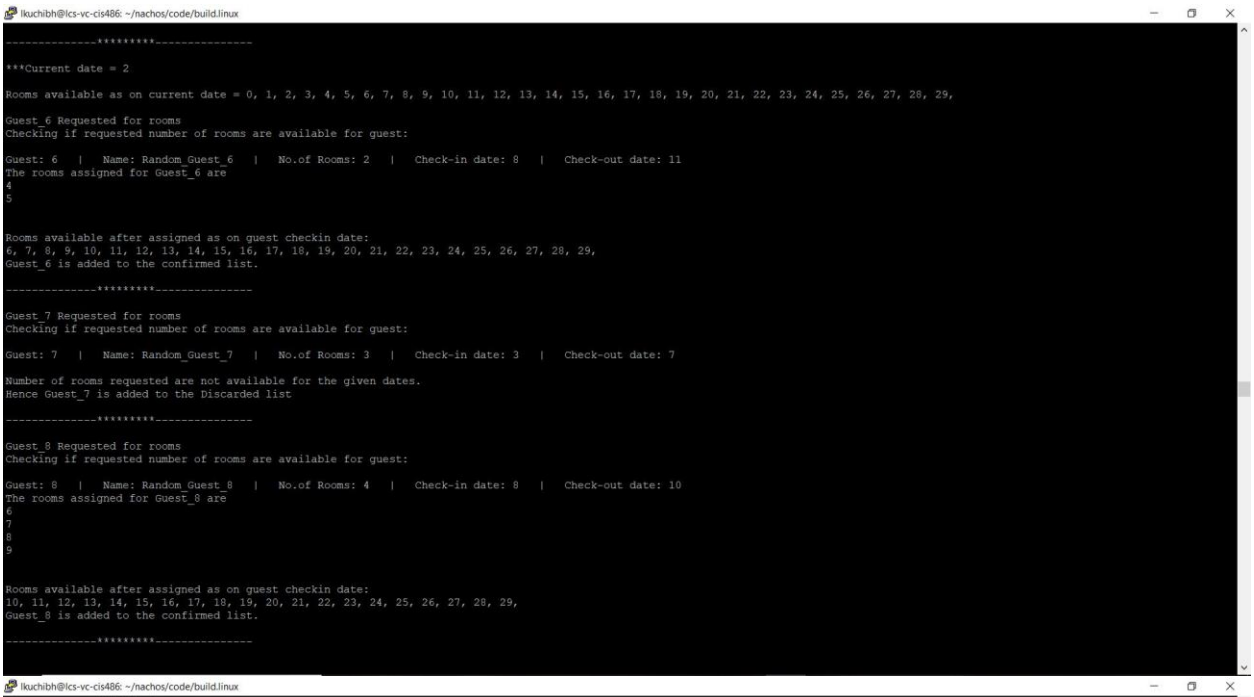
3.Enter ./nachos -K

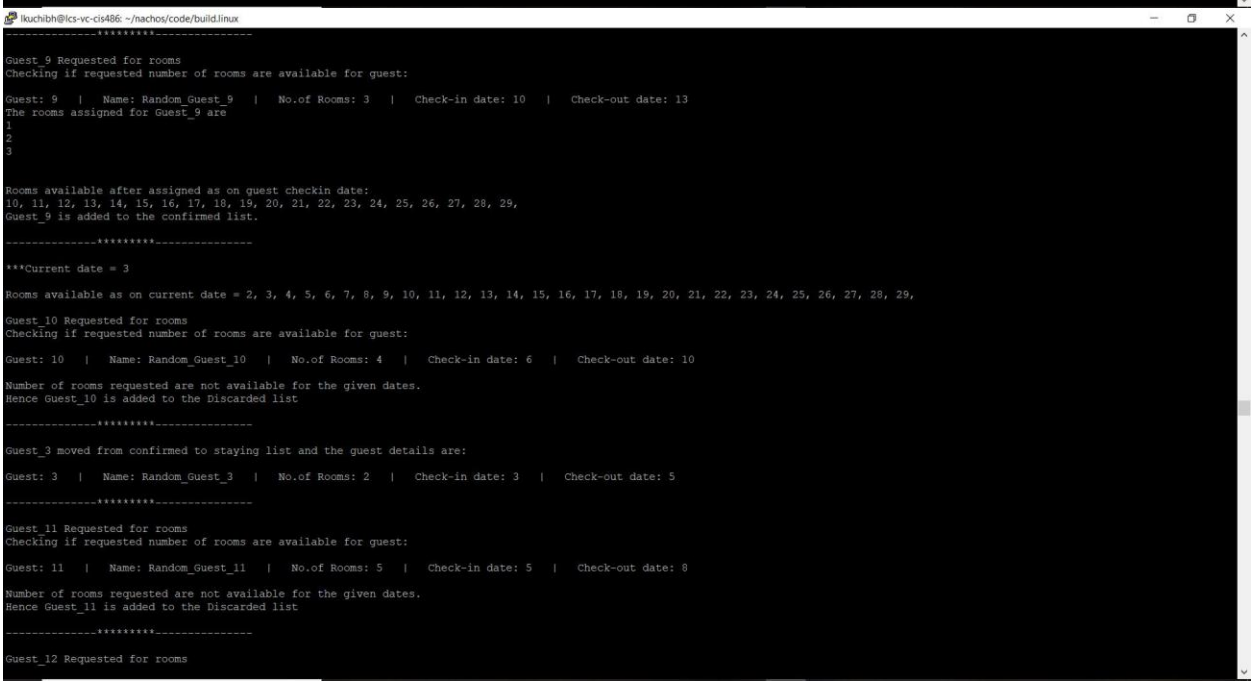
It displays the output for the Hotel Reservation Tracker.

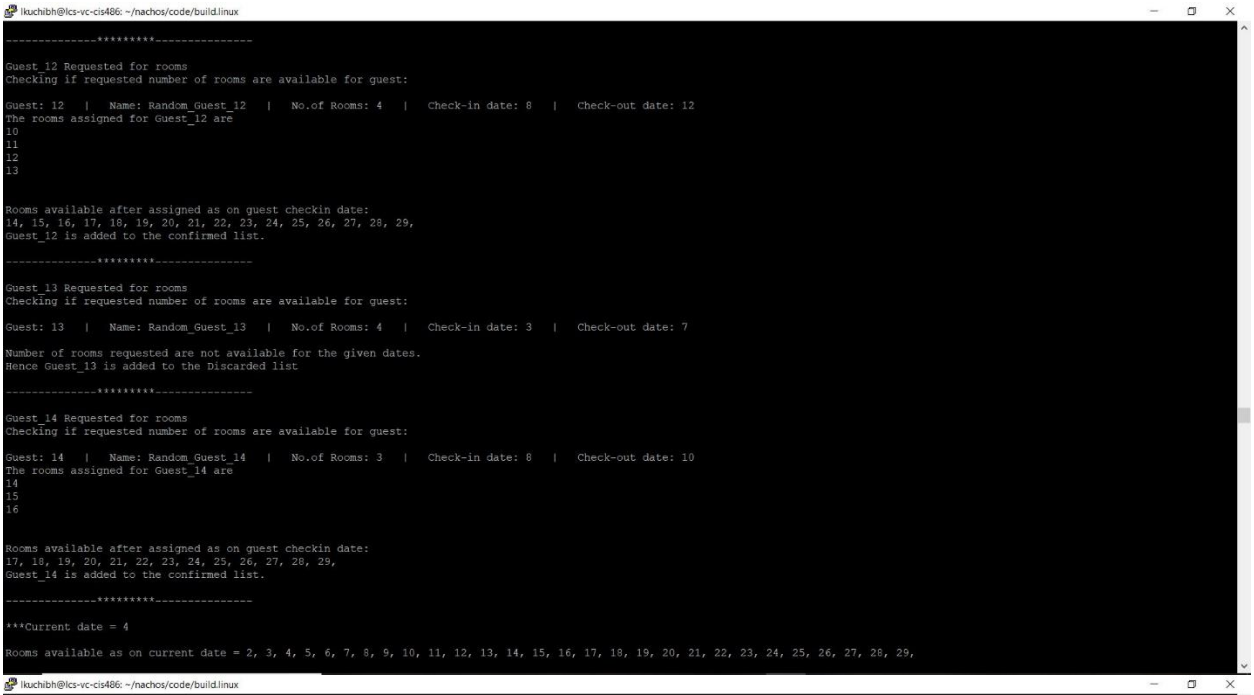
Output Snapshots:

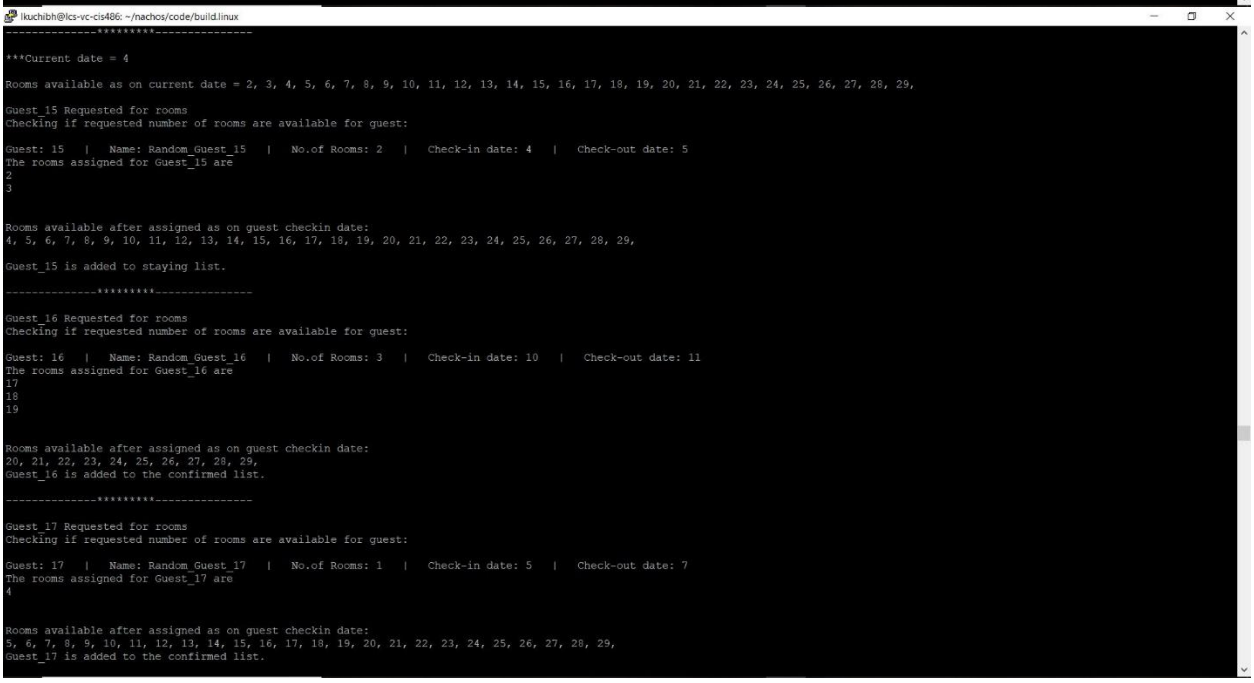


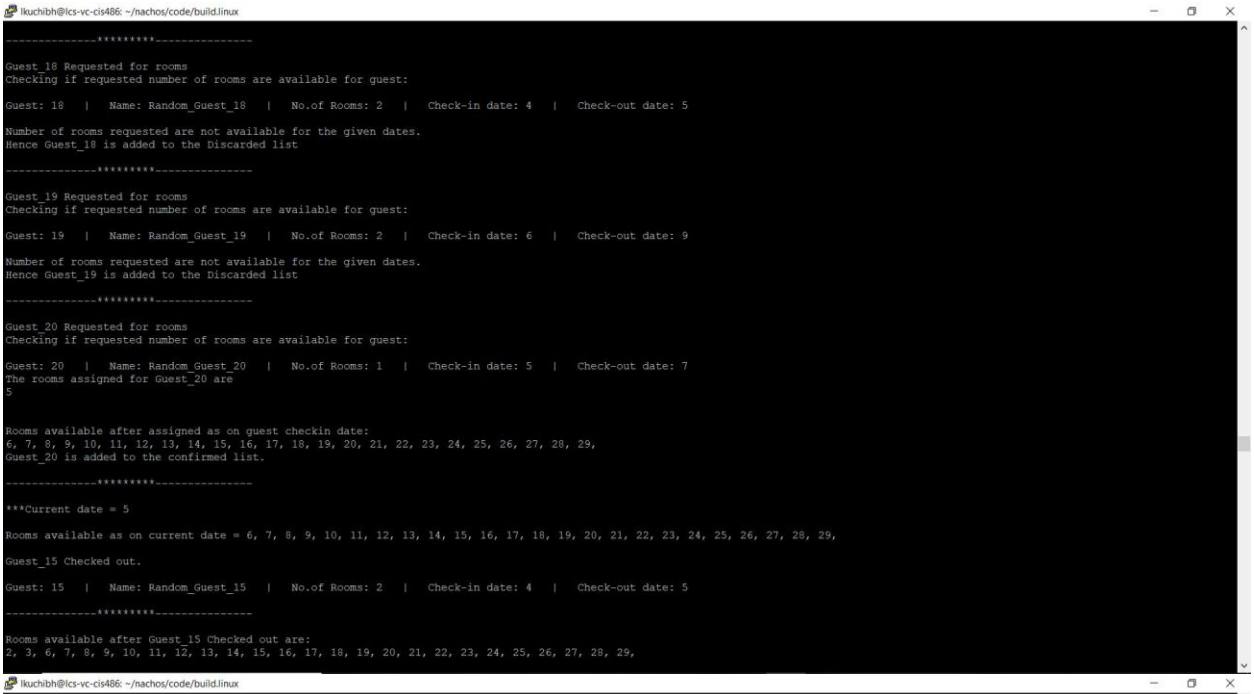


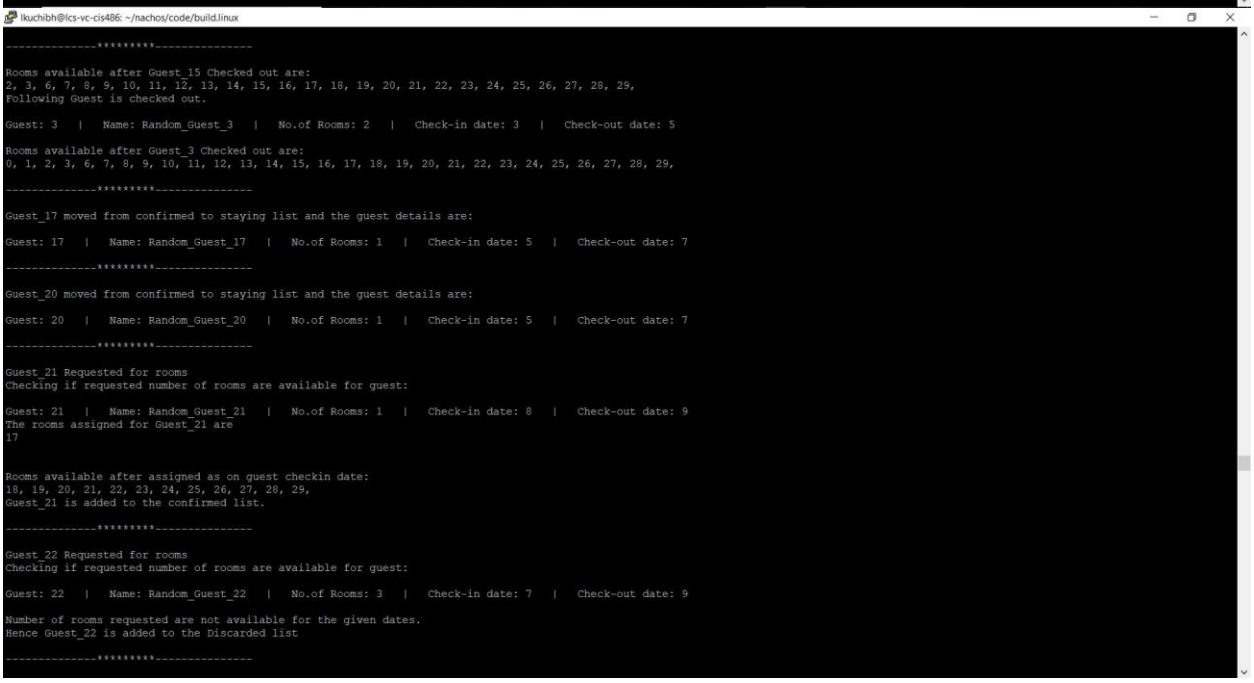

lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
***Current date = 2
Rooms available as on current date = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_6 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 6 | Name: Random_Guest_6 | No.of Rooms: 2 | Check-in date: 8 | Check-out date: 11
The rooms assigned for Guest_6 are
4
5
Rooms available after assigned as on guest checkin date:
6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_6 is added to the confirmed list.
----------*********----------
Guest_7 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 7 | Name: Random_Guest_7 | No.of Rooms: 3 | Check-in date: 3 | Check-out date: 7
Number of rooms requested are not available for the given dates.
Hence Guest_7 is added to the Discarded list
----------*********----------
Guest_8 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 8 | Name: Random_Guest_8 | No.of Rooms: 4 | Check-in date: 8 | Check-out date: 10
The rooms assigned for Guest_8 are
6
7
8
9
Rooms available after assigned as on guest checkin date:
10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_8 is added to the confirmed list.
----------*********----------


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
Guest_9 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 9 | Name: Random_Guest_9 | No.of Rooms: 3 | Check-in date: 10 | Check-out date: 13
The rooms assigned for Guest_9 are
1
2
3
Rooms available after assigned as on guest checkin date:
10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_9 is added to the confirmed list.
----------*********----------
***Current date = 3
Rooms available as on current date = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_10 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 10 | Name: Random_Guest_10 | No.of Rooms: 4 | Check-in date: 6 | Check-out date: 10
Number of rooms requested are not available for the given dates.
Hence Guest_10 is added to the Discarded list
----------*********----------
Guest_3 moved from confirmed to staying list and the guest details are:
Guest: 3 | Name: Random_Guest_3 | No.of Rooms: 2 | Check-in date: 3 | Check-out date: 5
----------*********----------
Guest_11 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 11 | Name: Random_Guest_11 | No.of Rooms: 5 | Check-in date: 5 | Check-out date: 8
Number of rooms requested are not available for the given dates.
Hence Guest_11 is added to the Discarded list
----------*********----------
Guest_12 Requested for rooms


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
Guest_12 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 12 | Name: Random_Guest_12 | No.of Rooms: 4 | Check-in date: 8 | Check-out date: 12
The rooms assigned for Guest_12 are
10
11
12
13
Rooms available after assigned as on guest checkin date:
14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_12 is added to the confirmed list.
----------*********----------
Guest_13 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 13 | Name: Random_Guest_13 | No.of Rooms: 4 | Check-in date: 3 | Check-out date: 7
Number of rooms requested are not available for the given dates.
Hence Guest_13 is added to the Discarded list
----------*********----------
Guest_14 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 14 | Name: Random_Guest_14 | No.of Rooms: 3 | Check-in date: 8 | Check-out date: 10
The rooms assigned for Guest_14 are
14
15
16
Rooms available after assigned as on guest checkin date:
17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_14 is added to the confirmed list.
----------*********----------
***Current date = 4
Rooms available as on current date = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
***Current date = 4
Rooms available as on current date = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_15 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 15 | Name: Random_Guest_15 | No.of Rooms: 2 | Check-in date: 4 | Check-out date: 5
The rooms assigned for Guest_15 are
2
3
Rooms available after assigned as on guest checkin date:
4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_15 is added to staying list.
----------*********----------
Guest_16 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 16 | Name: Random_Guest_16 | No.of Rooms: 3 | Check-in date: 10 | Check-out date: 11
The rooms assigned for Guest_16 are
17
18
19
Rooms available after assigned as on guest checkin date:
20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_16 is added to the confirmed list.
----------*********----------
Guest_17 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 17 | Name: Random_Guest_17 | No.of Rooms: 1 | Check-in date: 5 | Check-out date: 7
The rooms assigned for Guest_17 are
4
Rooms available after assigned as on guest checkin date:
5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_17 is added to the confirmed list.


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
Guest_18 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 18 | Name: Random_Guest_18 | No.of Rooms: 2 | Check-in date: 4 | Check-out date: 5
Number of rooms requested are not available for the given dates.
Hence Guest_18 is added to the Discarded list
----------*********----------
Guest_19 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 19 | Name: Random_Guest_19 | No.of Rooms: 2 | Check-in date: 6 | Check-out date: 9
Number of rooms requested are not available for the given dates.
Hence Guest_19 is added to the Discarded list
----------*********----------
Guest_20 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 20 | Name: Random_Guest_20 | No.of Rooms: 1 | Check-in date: 5 | Check-out date: 7
The rooms assigned for Guest_20 are
5
Rooms available after assigned as on guest checkin date:
6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_20 is added to the confirmed list.
----------*********----------
***Current date = 5
Rooms available as on current date = 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_15 Checked out.
Guest: 15 | Name: Random_Guest_15 | No.of Rooms: 2 | Check-in date: 4 | Check-out date: 5
----------*********----------
Rooms available after Guest_15 Checked out are:
2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,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----------*********----------
Rooms available after Guest_15 Checked out are:
2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Following Guest is checked out.
Guest: 3 | Name: Random_Guest_3 | No.of Rooms: 2 | Check-in date: 3 | Check-out date: 5
Rooms available after Guest_3 Checked out are:
0, 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
----------*********----------
Guest_17 moved from confirmed to staying list and the guest details are:
Guest: 17 | Name: Random_Guest_17 | No.of Rooms: 1 | Check-in date: 5 | Check-out date: 7
----------*********----------
Guest_20 moved from confirmed to staying list and the guest details are:
Guest: 20 | Name: Random_Guest_20 | No.of Rooms: 1 | Check-in date: 5 | Check-out date: 7
----------*********----------
Guest_21 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 21 | Name: Random_Guest_21 | No.of Rooms: 1 | Check-in date: 8 | Check-out date: 9
The rooms assigned for Guest_21 are
17
Rooms available after assigned as on guest checkin date:
18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_21 is added to the confirmed list.
----------*********----------
Guest_22 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 22 | Name: Random_Guest_22 | No.of Rooms: 3 | Check-in date: 7 | Check-out date: 9
Number of rooms requested are not available for the given dates.
Hence Guest_22 is added to the Discarded list
----------*********----------

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---------*********----------

Guest_23 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 23   |   Name: Random_Guest_23   |   No.of Rooms: 2   |   Check-in date: 8   |   Check-out date: 10

Number of rooms requested are not available for the given dates.
Hence Guest_23 is added to the Discarded list

---------*********----------

Guest_24 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 24   |   Name: Random_Guest_24   |   No.of Rooms: 3   |   Check-in date: 5   |   Check-out date: 9

Number of rooms requested are not available for the given dates.
Hence Guest_24 is added to the Discarded list

---------*********----------

Guest_25 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 25   |   Name: Random_Guest_25   |   No.of Rooms: 3   |   Check-in date: 8   |   Check-out date: 11

Number of rooms requested are not available for the given dates.
Hence Guest_25 is added to the Discarded list

---------*********----------

***Current date = 6

Rooms available as on current date = 0, 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

Guest_26 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 26   |   Name: Random_Guest_26   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 11
The rooms assigned for Guest_26 are
20
21
22


Rooms available after assigned as on guest checkin date:
23, 24, 25, 26, 27, 28, 29,
```

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```
Rooms available after assigned as on guest checkin date:
23, 24, 25, 26, 27, 28, 29,
Guest_26 is added to the confirmed list.

---------*********----------

Guest_27 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 27   |   Name: Random_Guest_27   |   No.of Rooms: 4   |   Check-in date: 6   |   Check-out date: 10

Number of rooms requested are not available for the given dates.
Hence Guest_27 is added to the Discarded list

---------*********----------

Guest_28 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 28   |   Name: Random_Guest_28   |   No.of Rooms: 4   |   Check-in date: 7   |   Check-out date: 10

Number of rooms requested are not available for the given dates.
Hence Guest_28 is added to the Discarded list

---------*********----------

Guest_29 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 29   |   Name: Random_Guest_29   |   No.of Rooms: 4   |   Check-in date: 10   |   Check-out date: 14
The rooms assigned for Guest_29 are
23
24
25
26


Rooms available after assigned as on guest checkin date:
27, 28, 29,
Guest_29 is added to the confirmed list.

---------*********----------

***Current date = 7

Rooms available as on current date = 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

Guest_30 Requested for rooms
```

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```
---------*********----------

***Current date = 7

Rooms available as on current date = 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

Guest_30 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 30   |   Name: Random_Guest_30   |   No.of Rooms: 2   |   Check-in date: 9   |   Check-out date: 13

Number of rooms requested are not available for the given dates.
Hence Guest_30 is added to the Discarded list

---------*********----------
Following Guest is checked out.

Guest: 20   |   Name: Random_Guest_20   |   No.of Rooms: 1   |   Check-in date: 5   |   Check-out date: 7

Rooms available after Guest_20 Checked out are:
5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

---------*********----------
Following Guest is checked out.

Guest: 17   |   Name: Random_Guest_17   |   No.of Rooms: 1   |   Check-in date: 5   |   Check-out date: 7

Rooms available after Guest_17 Checked out are:
4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

---------*********----------

Guest_1 moved from confirmed to staying list and the guest details are:

Guest: 1   |   Name: Random_Guest_1   |   No.of Rooms: 4   |   Check-in date: 7   |   Check-out date: 9

---------*********----------

Guest_31 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 31   |   Name: Random_Guest_31   |   No.of Rooms: 3   |   Check-in date: 7   |   Check-out date: 8

Number of rooms requested are not available for the given dates.
Hence Guest_31 is added to the Discarded list

---------*********----------

Guest_32 Requested for rooms
```

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Guest_32 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 32   |   Name: Random_Guest_32   |   No.of Rooms: 4   |   Check-in date: 10   |   Check-out date: 11

Number of rooms requested are not available for the given dates.
Hence Guest_32 is added to the Discarded list

---------*********----------

Guest_33 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 33   |   Name: Random_Guest_33   |   No.of Rooms: 2   |   Check-in date: 9   |   Check-out date: 12

Number of rooms requested are not available for the given dates.
Hence Guest_33 is added to the Discarded list

---------*********----------

Guest_34 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 34   |   Name: Random_Guest_34   |   No.of Rooms: 5   |   Check-in date: 10   |   Check-out date: 13

Number of rooms requested are not available for the given dates.
Hence Guest_34 is added to the Discarded list

---------*********----------

***Current date = 8

Rooms available as on current date = 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

Guest_35 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 35   |   Name: Random_Guest_35   |   No.of Rooms: 5   |   Check-in date: 9   |   Check-out date: 13

Number of rooms requested are not available for the given dates.
Hence Guest_35 is added to the Discarded list

---------*********----------

Guest_21 moved from confirmed to staying list and the guest details are:

Guest: 21   |   Name: Random_Guest_21   |   No.of Rooms: 1   |   Check-in date: 8   |   Check-out date: 9
```

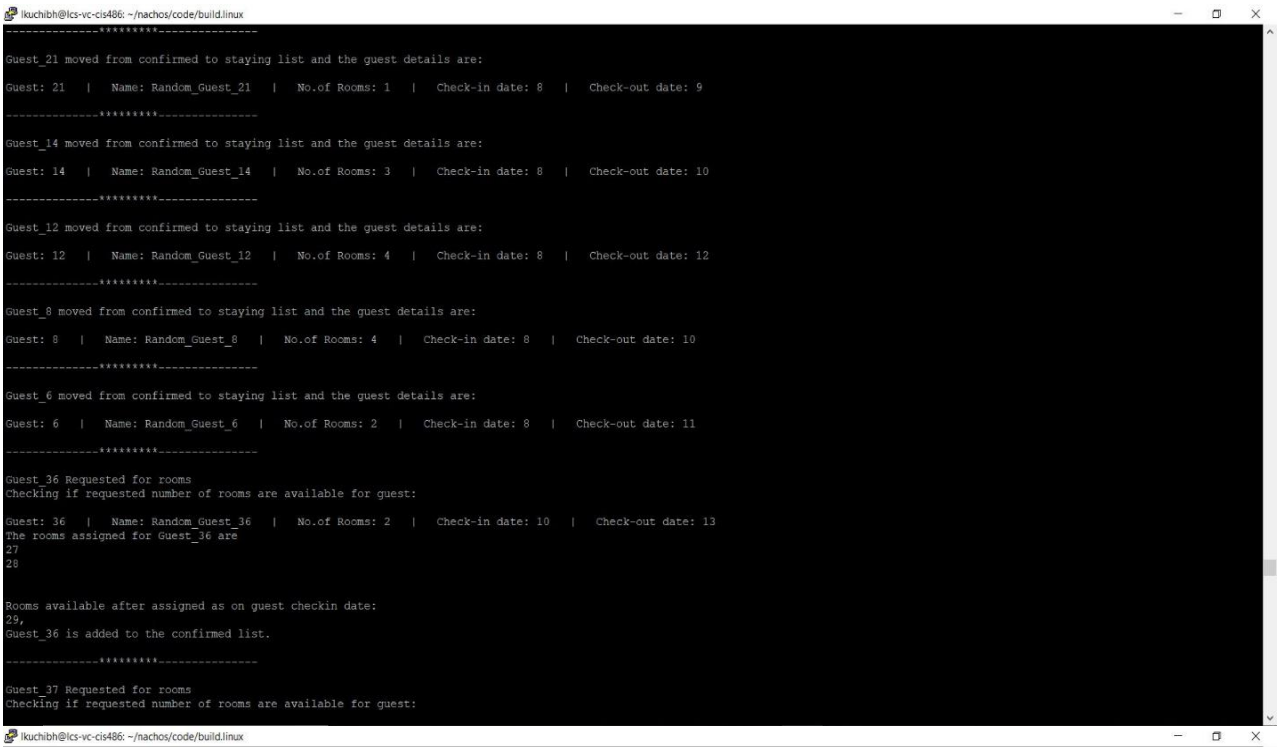
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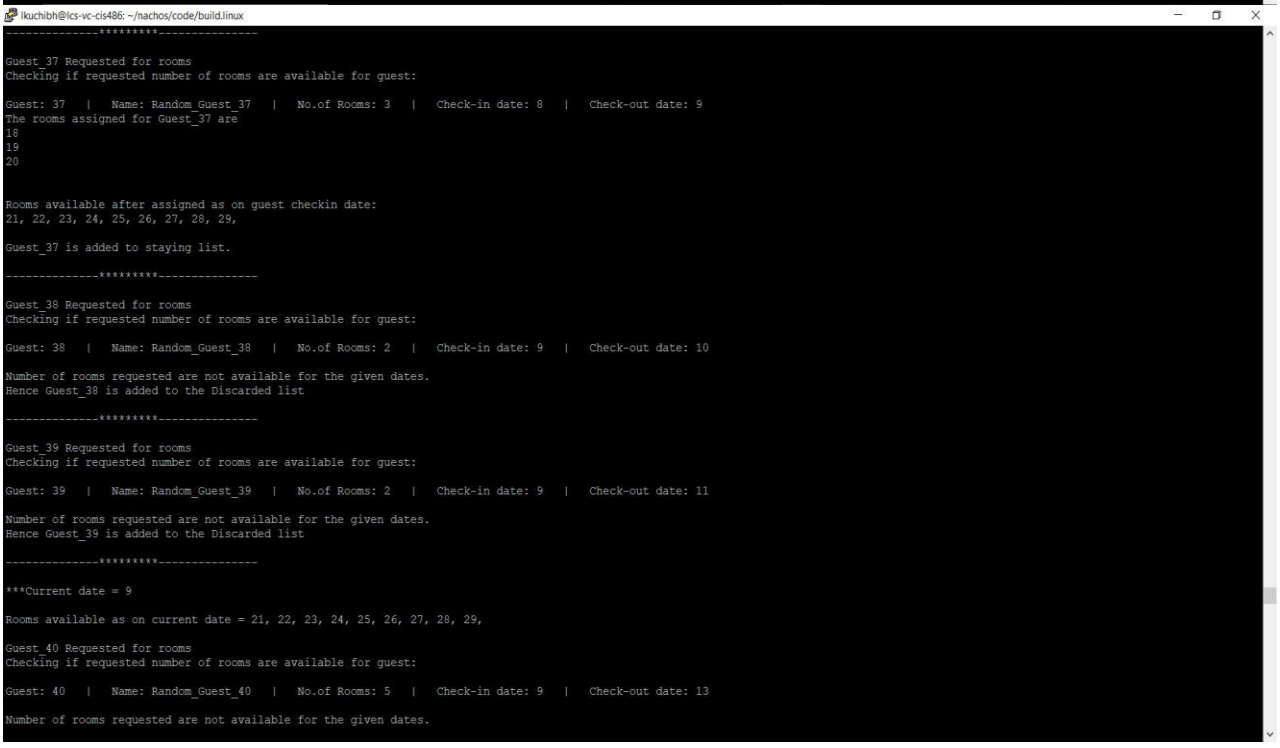
----------*********----------
Guest_21 moved from confirmed to staying list and the guest details are:
Guest: 21 | Name: Random_Guest_21 | No.of Rooms: 1 | Check-in date: 8 | Check-out date: 9
----------*********----------
Guest_14 moved from confirmed to staying list and the guest details are:
Guest: 14 | Name: Random_Guest_14 | No.of Rooms: 3 | Check-in date: 8 | Check-out date: 10
----------*********----------
Guest_12 moved from confirmed to staying list and the guest details are:
Guest: 12 | Name: Random_Guest_12 | No.of Rooms: 4 | Check-in date: 8 | Check-out date: 12
----------*********----------
Guest_8 moved from confirmed to staying list and the guest details are:
Guest: 8 | Name: Random_Guest_8 | No.of Rooms: 4 | Check-in date: 8 | Check-out date: 10
----------*********----------
Guest_6 moved from confirmed to staying list and the guest details are:
Guest: 6 | Name: Random_Guest_6 | No.of Rooms: 2 | Check-in date: 8 | Check-out date: 11
----------*********----------
Guest_36 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 36 | Name: Random_Guest_36 | No.of Rooms: 2 | Check-in date: 10 | Check-out date: 13
The rooms assigned for Guest_36 are
27
28
Rooms available after assigned as on guest checkin date:
29,
Guest_36 is added to the confirmed list.
----------*********----------
Guest_37 Requested for rooms
Checking if requested number of rooms are available for guest:


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
Guest_37 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 37 | Name: Random_Guest_37 | No.of Rooms: 3 | Check-in date: 8 | Check-out date: 9
The rooms assigned for Guest_37 are
18
19
20
Rooms available after assigned as on guest checkin date:
21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_37 is added to staying list.
----------*********----------
Guest_38 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 38 | Name: Random_Guest_38 | No.of Rooms: 2 | Check-in date: 9 | Check-out date: 10
Number of rooms requested are not available for the given dates.
Hence Guest_38 is added to the Discarded list
----------*********----------
Guest_39 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 39 | Name: Random_Guest_39 | No.of Rooms: 2 | Check-in date: 9 | Check-out date: 11
Number of rooms requested are not available for the given dates.
Hence Guest_39 is added to the Discarded list
----------*********----------
***Current date = 9
Rooms available as on current date = 21, 22, 23, 24, 25, 26, 27, 28, 29,
Guest_40 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 40 | Name: Random_Guest_40 | No.of Rooms: 5 | Check-in date: 9 | Check-out date: 13
Number of rooms requested are not available for the given dates.

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```
Guest: 40   |   Name: Random_Guest_40   |   No.of Rooms: 5   |   Check-in date: 9   |   Check-out date: 13

Number of rooms requested are not available for the given dates.
Hence Guest_40 is added to the Discarded list

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Guest_37 Checked out.

Guest: 37   |   Name: Random_Guest_37   |   No.of Rooms: 3   |   Check-in date: 8   |   Check-out date: 9

--------------*********----------------

Rooms available after Guest_37 Checked out are:
18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
Following Guest is checked out.

Guest: 21   |   Name: Random_Guest_21   |   No.of Rooms: 1   |   Check-in date: 8   |   Check-out date: 9

Rooms available after Guest_21 Checked out are:
17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

--------------*********----------------
Following Guest is checked out.

Guest: 1   |   Name: Random_Guest_1   |   No.of Rooms: 4   |   Check-in date: 7   |   Check-out date: 9

Rooms available after Guest_1 Checked out are:
0, 1, 2, 3, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

--------------*********----------------

Guest_41 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 41   |   Name: Random_Guest_41   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14
The rooms assigned for Guest_41 are
29


Rooms available after assigned as on guest checkin date:

Guest_41 is added to the confirmed list.

--------------*********----------------

Guest_42 Requested for rooms
Checking if requested number of rooms are available for guest:
```

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```
Guest_42 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 42   |   Name: Random_Guest_42   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 14

Number of rooms requested are not available for the given dates.
Hence Guest_42 is added to the Discarded list

--------------*********----------------

Guest_43 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 43   |   Name: Random_Guest_43   |   No.of Rooms: 2   |   Check-in date: 10   |   Check-out date: 12

Number of rooms requested are not available for the given dates.
Hence Guest_43 is added to the Discarded list

--------------*********----------------

Guest_44 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 44   |   Name: Random_Guest_44   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 11

Number of rooms requested are not available for the given dates.
Hence Guest_44 is added to the Discarded list

--------------*********----------------

***Current date = 10

Rooms available as on current date =

Guest_45 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 45   |   Name: Random_Guest_45   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 13

Number of rooms requested are not available for the given dates.
Hence Guest_45 is added to the Discarded list

--------------*********----------------
Following Guest is checked out.

Guest: 8   |   Name: Random_Guest_8   |   No.of Rooms: 4   |   Check-in date: 8   |   Check-out date: 10

Rooms available after Guest_8 Checked out are:
```

```
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Guest: 8   |   Name: Random_Guest_8   |   No.of Rooms: 4   |   Check-in date: 8   |   Check-out date: 10

Rooms available after Guest_8 Checked out are:
6, 7, 8, 9,

---------*********----------
Following Guest is checked out.

Guest: 14   |   Name: Random_Guest_14   |   No.of Rooms: 3   |   Check-in date: 8   |   Check-out date: 10

Rooms available after Guest_14 Checked out are:
6, 7, 8, 9, 14, 15, 16,

---------*********----------

Guest_41 moved from confirmed to staying list and the guest details are:

Guest: 41   |   Name: Random_Guest_41   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14

---------*********----------

Guest_36 moved from confirmed to staying list and the guest details are:

Guest: 36   |   Name: Random_Guest_36   |   No.of Rooms: 2   |   Check-in date: 10   |   Check-out date: 13

---------*********----------

Guest_29 moved from confirmed to staying list and the guest details are:

Guest: 29   |   Name: Random_Guest_29   |   No.of Rooms: 4   |   Check-in date: 10   |   Check-out date: 14

---------*********----------

Guest_26 moved from confirmed to staying list and the guest details are:

Guest: 26   |   Name: Random_Guest_26   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 11

---------*********----------

Guest_16 moved from confirmed to staying list and the guest details are:

Guest: 16   |   Name: Random_Guest_16   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 11

---------*********----------

Guest_5 moved from confirmed to staying list and the guest details are:

Guest: 5   |   Name: Random_Guest_5   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14
```

```
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Guest_5 moved from confirmed to staying list and the guest details are:

Guest: 5   |   Name: Random_Guest_5   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14

---------*********----------

Guest_9 moved from confirmed to staying list and the guest details are:

Guest: 9   |   Name: Random_Guest_9   |   No.of Rooms: 3   |   Check-in date: 10   |   Check-out date: 13

---------*********----------

Guest_46 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 46   |   Name: Random_Guest_46   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14
The rooms assigned for Guest_46 are
6


Rooms available after assigned as on guest checkin date:
7, 8, 9, 14, 15, 16,

Guest_46 is added to staying list.

---------*********----------

Guest_47 Requested for rooms
Checking if requested number of rooms are available for guest:

Guest: 47   |   Name: Random_Guest_47   |   No.of Rooms: 5   |   Check-in date: 10   |   Check-out date: 11
The rooms assigned for Guest_47 are
7
8
9
14
15


Rooms available after assigned as on guest checkin date:
16,

Guest_47 is added to staying list.

---------*********----------

Guest_48 Requested for rooms
Checking if requested number of rooms are available for guest:
```
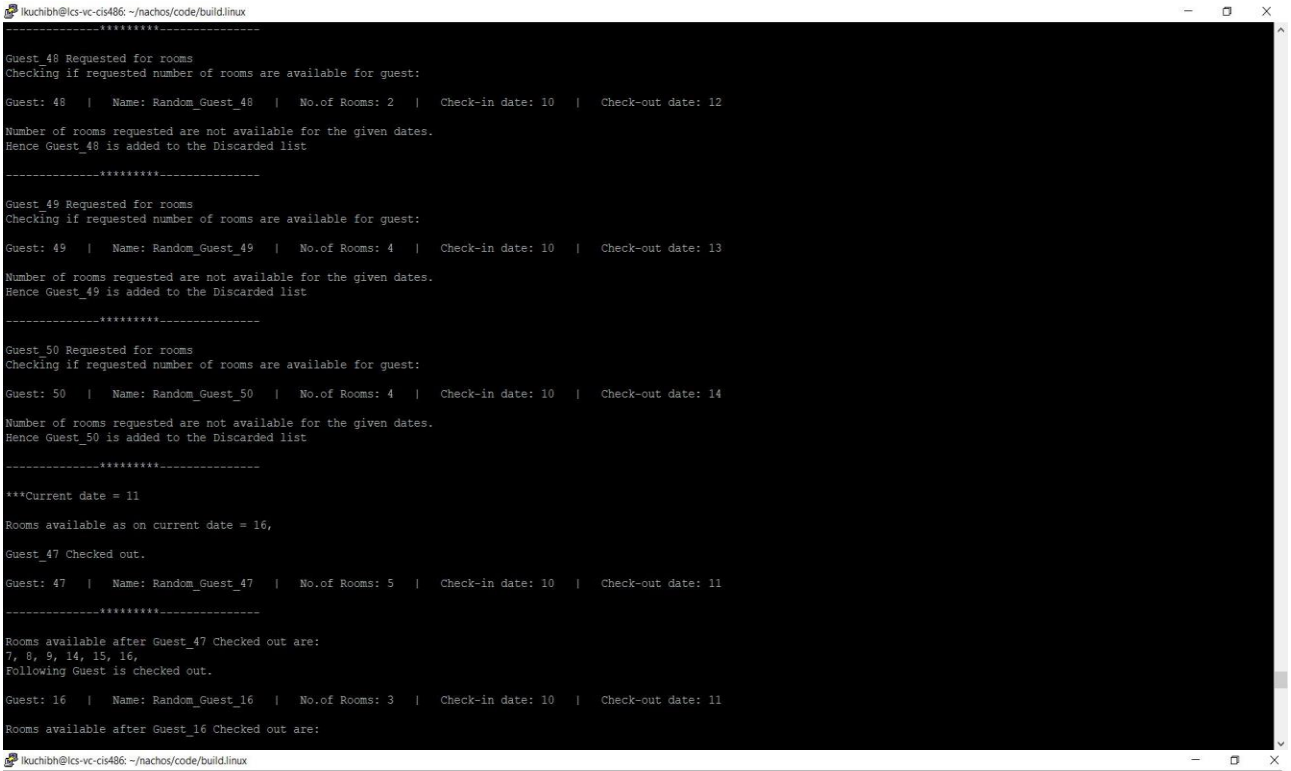
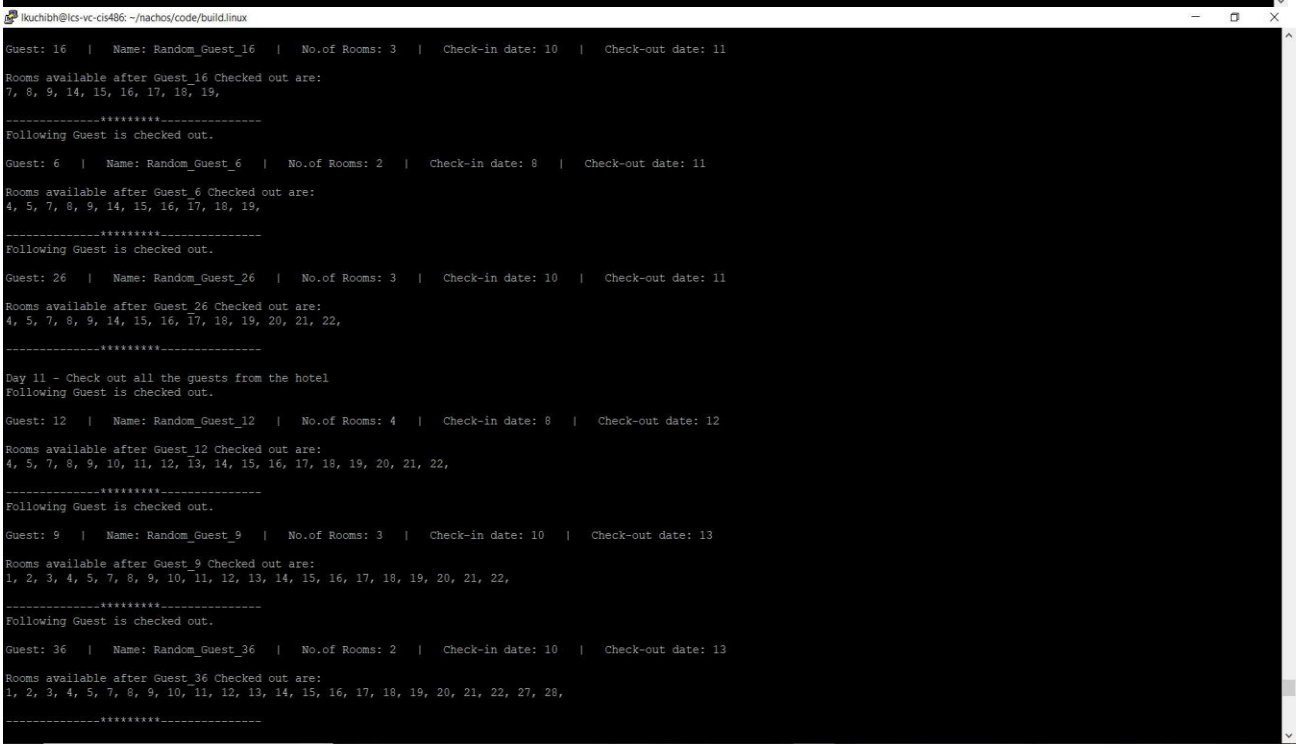


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
----------*********----------
Guest_48 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 48 | Name: Random_Guest_48 | No.of Rooms: 2 | Check-in date: 10 | Check-out date: 12
Number of rooms requested are not available for the given dates.
Hence Guest_48 is added to the Discarded list
----------*********----------
Guest_49 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 49 | Name: Random_Guest_49 | No.of Rooms: 4 | Check-in date: 10 | Check-out date: 13
Number of rooms requested are not available for the given dates.
Hence Guest_49 is added to the Discarded list
----------*********----------
Guest_50 Requested for rooms
Checking if requested number of rooms are available for guest:
Guest: 50 | Name: Random_Guest_50 | No.of Rooms: 4 | Check-in date: 10 | Check-out date: 14
Number of rooms requested are not available for the given dates.
Hence Guest_50 is added to the Discarded list
----------*********----------
***Current date = 11
Rooms available as on current date = 16,
Guest_47 Checked out.
Guest: 47 | Name: Random_Guest_47 | No.of Rooms: 5 | Check-in date: 10 | Check-out date: 11
----------*********----------
Rooms available after Guest_47 Checked out are:
7, 8, 9, 14, 15, 16,
Following Guest is checked out.
Guest: 16 | Name: Random_Guest_16 | No.of Rooms: 3 | Check-in date: 10 | Check-out date: 11
Rooms available after Guest_16 Checked out are:


lkuchibh@lcs-vc-cis486: ~/nachos/code/build.linux
Guest: 16 | Name: Random_Guest_16 | No.of Rooms: 3 | Check-in date: 10 | Check-out date: 11
Rooms available after Guest_16 Checked out are:
7, 8, 9, 14, 15, 16, 17, 18, 19,
----------*********----------
Following Guest is checked out.
Guest: 6 | Name: Random_Guest_6 | No.of Rooms: 2 | Check-in date: 8 | Check-out date: 11
Rooms available after Guest_6 Checked out are:
4, 5, 7, 8, 9, 14, 15, 16, 17, 18, 19,
----------*********----------
Following Guest is checked out.
Guest: 26 | Name: Random_Guest_26 | No.of Rooms: 3 | Check-in date: 10 | Check-out date: 11
Rooms available after Guest_26 Checked out are:
4, 5, 7, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22,
----------*********----------
Day 11 - Check out all the guests from the hotel
Following Guest is checked out.
Guest: 12 | Name: Random_Guest_12 | No.of Rooms: 4 | Check-in date: 8 | Check-out date: 12
Rooms available after Guest_12 Checked out are:
4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
----------*********----------
Following Guest is checked out.
Guest: 9 | Name: Random_Guest_9 | No.of Rooms: 3 | Check-in date: 10 | Check-out date: 13
Rooms available after Guest_9 Checked out are:
1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
----------*********----------
Following Guest is checked out.
Guest: 36 | Name: Random_Guest_36 | No.of Rooms: 2 | Check-in date: 10 | Check-out date: 13
Rooms available after Guest_36 Checked out are:
1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28,
----------*********----------

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```
--------------*********---------------

Guest_46 Checked out.

Guest: 46   |   Name: Random_Guest_46   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14

--------------*********---------------

Rooms available after Guest_46 Checked out are:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28,
Following Guest is checked out.

Guest: 5   |   Name: Random_Guest_5   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14

Rooms available after Guest_5 Checked out are:
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28,

--------------*********---------------
Following Guest is checked out.

Guest: 29   |   Name: Random_Guest_29   |   No.of Rooms: 4   |   Check-in date: 10   |   Check-out date: 14

Rooms available after Guest_29 Checked out are:
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,

--------------*********---------------
Following Guest is checked out.

Guest: 41   |   Name: Random_Guest_41   |   No.of Rooms: 1   |   Check-in date: 10   |   Check-out date: 14

Rooms available after Guest_41 Checked out are:
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

--------------*********---------------

    Tracker Summary
---------------------------------------

**** Rates on Day: 1 ****

 Vacancy Rate = 100%
Occupancy Rate = 0%

**** Rates on Day: 2 ****

 Vacancy Rate = 100%
Occupancy Rate = 0%

**** Rates on Day: 3 ****
```

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```
 Vacancy Rate = 93.3333%
Occupancy Rate = 6.66666%

**** Rates on Day: 4 ****

 Vacancy Rate = 86.6667%
Occupancy Rate = 13.3333%

**** Rates on Day: 5 ****

 Vacancy Rate = 93.3333%
Occupancy Rate = 6.66666%

**** Rates on Day: 6 ****

 Vacancy Rate = 93.3333%
Occupancy Rate = 6.66666%

**** Rates on Day: 7 ****

 Vacancy Rate = 86.6667%
Occupancy Rate = 13.3333%

**** Rates on Day: 8 ****

 Vacancy Rate = 30%
Occupancy Rate = 70%

**** Rates on Day: 9 ****

 Vacancy Rate = 56.6667%
Occupancy Rate = 43.3333%

**** Rates on Day: 10 ****

 Vacancy Rate = 3.33333%
Occupancy Rate = 96.6667%

**** Rates on Day: 11 ****

 Vacancy Rate = 46.6667%
Occupancy Rate = 53.3333%

!!!!Total Granted Rate  = 60%

--------------*****End of the Hotal Reservation Tracker*****--------------

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```