Murder On The Orient Express

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Overview

- Problem Statement
- Algorithm
- Implementation
- Testing
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Problem Statement

Detective Hercule Poirot was travelling to London via a three days trip on Orient Express .On the second day,Poirot found out that a passenger had been murdered and the murderer is hidden somewhere in the train. He planned to investigate all the room secretly. There were ***n*** numbers of rooms in the train numbered from 1 to n. Each room can be unlocked by entering a secret number in the lock, If room number is n, it can be unlock by nth prime number and again locked with sum of n and nth prime number. For example, Room 5 can be entering 11 and locked by entering 16. Here, 11 is the 5^{th} prime number and 16 is the sum of 5 and 11.

In this project, We have to write a program that assists Porirot to unlock and lock a room.

Algorithm

1. Send a input in void function from main function
2. Play a infinity loop.
   - 2.1: Scan a number as input.
3. If number is not equal to 0
   - 3.1: If numbem(num) is less then equal 100
     - 3.1.1: Loop from i=2 to less then equal 10000
       - 3.1.1.1: If count not equal to num
         - 3.1.1.1.1: Play a loop from j=2 to less then equal j
           - 3.1.1.1.1.1: If i and j are equal

Algorithm

- 3.1.1.1.1.1.1: Add 1 to Count and store it in count.
- 3.1.1.1.1.1.2: Srore i in un.
- 3.1.1.1.1.2: If else i mod j equal to 0
- 3.1.1.1.1.2.1: Break.

- 3.1.2: Count equal to 0
- 3.1.3: Print Unlock with: (Value of un)
- 3.1.4: Print Lock with: (Sum of num and un)
- 3.2: Else
- 3.2.1: Print Room does not exist.

4. Else
- 4.1: Break.

Implementation

Main Function:

```
int main()
 {
    int input;
    printf("\t\t\tMURDER ON THE ORIENT EXPRESS\n");
    printf("--------------------------------------------------------------------
\n");
    function(input);                    //Send input in a function
 return 0;
 }
```

Implementation

Taking Input:

```
void function(x)                    //Receive input in void type function
{
    int num,i,j,un,count=0;         //Declare integer
    for( ; ; )                      //Infinity Loop
    {
        printf("Enter Room Number: ");
        scanf("%d",&num);           //Take a number as a input
        printf("\n");
```

Implementation

Condition :

```
if(i==j)                        // If condition
{
        count=count+1;          // Counter
        un=i;                   //Store i in un.
}
else if(i%j==0)
{
         break;                 //Break statement
}
```

Implementation

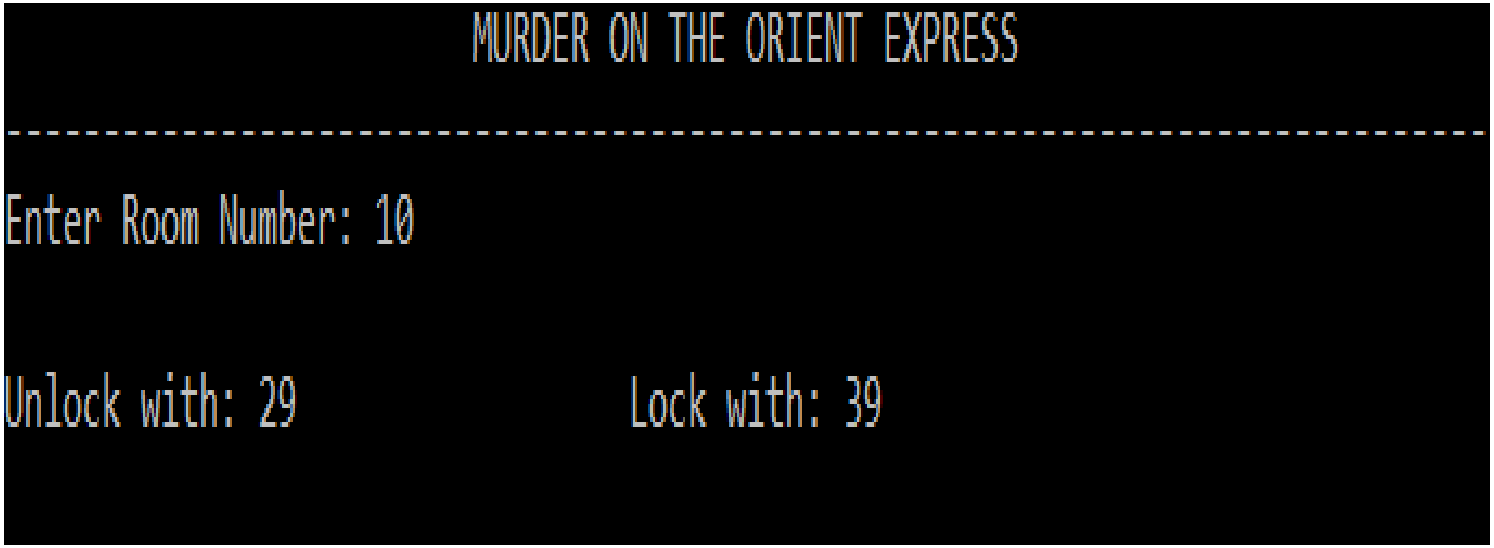
Print:

```
printf("Unlock with: %d",un);                    //Print un .

printf("\t\t\tLock with: %d\n",num+un);  //Print sum of num and un.
```

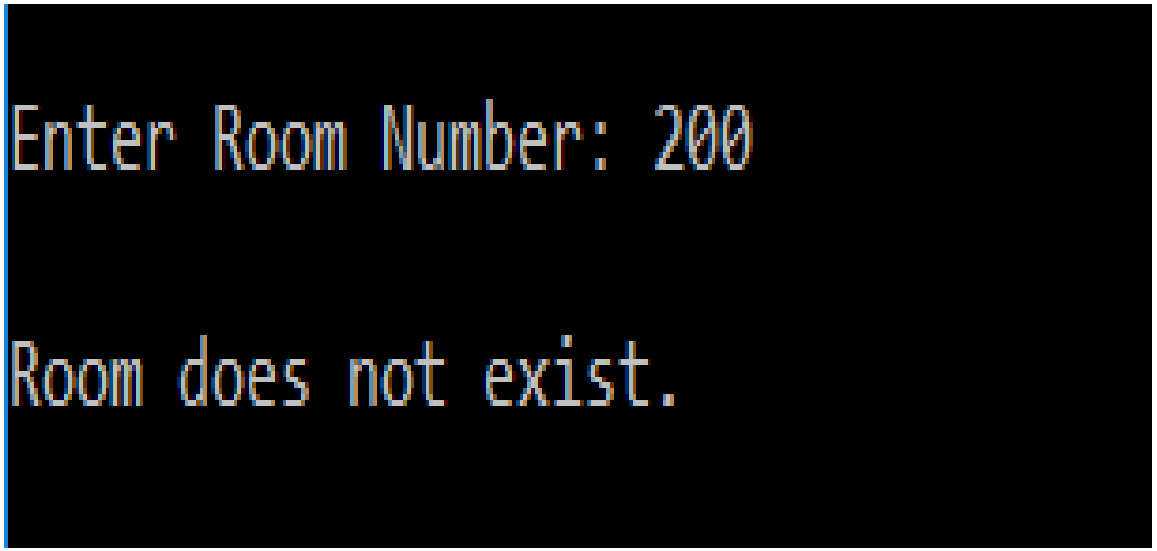
Testing

Testcase 1:



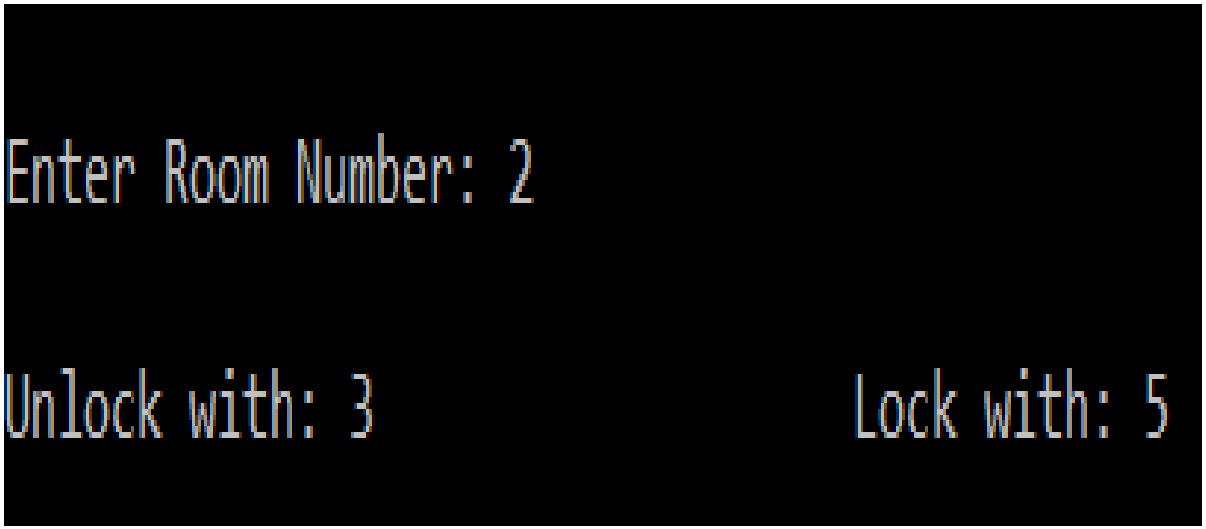
Testing

Testcase 2:



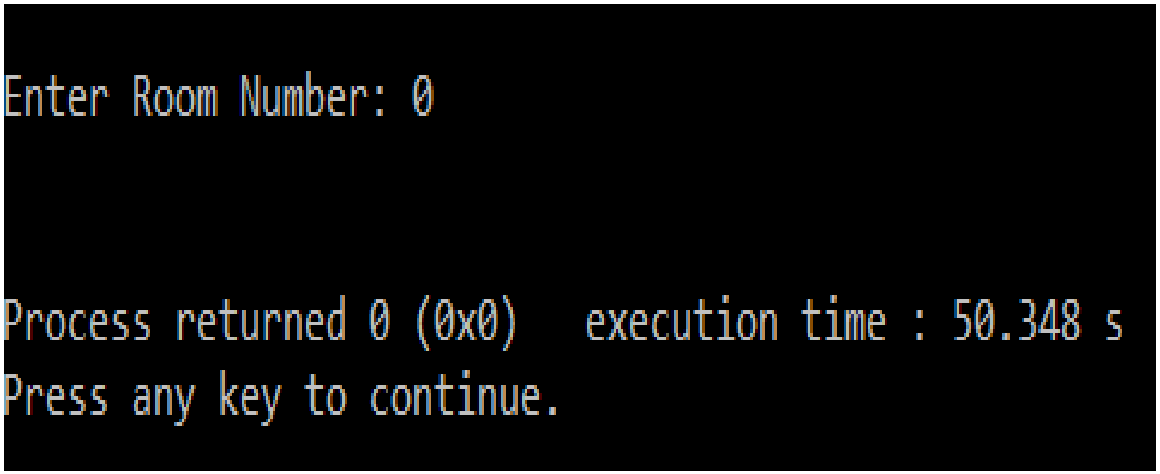
Testing

Testcase 3:



Testing

Testcase 4:



Limitations

- Our program is unable to check whether the input is empty or not.
- Our program is unable to check uppercase and lowercase characters or symbols.
- Our program is unable to check negatives inputs .

Thank You