

Hotel

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# Chapter 1

## Class Index

### 1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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<a href="#">HotelBuilding</a>	13
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## Chapter 2

# File Index

### 2.1 File List

Here is a list of all documented files with brief descriptions:

<a href="#">Date.hpp</a>	.....	??
<a href="#">Hotel.hpp</a>	.....	??
<a href="#">HotelBuilding.hpp</a>	.....	??
<a href="#">Reservation.hpp</a>	.....	??
<a href="#">Room.hpp</a>	.....	??
<a href="#">RoomAnalyzer.hpp</a>	.....	??
<a href="#">Types.hpp</a>	.....	??





## Chapter 3

# Class Documentation

### 3.1 Date Class Reference

#### Public Member Functions

- [Date](#) (unsigned short d=1, unsigned short m=1, unsigned short y=1900)  
*Construct a new [Date](#) object from day, month and year. Default [Date](#) is 1/1/1900.*
- bool [operator<](#) ([Date](#) other) const  
*checks if this [Date](#) is chronologically before other [Date](#)*
- bool **[operator<=](#)** ([Date](#) other) const  
*see [operator<](#)*
- bool [operator>](#) ([Date](#) other) const  
*checks if this [Date](#) is chronologically after other [Date](#)*
- bool **[operator>=](#)** ([Date](#) other) const  
*see [operator>](#)*
- bool [operator==](#) ([Date](#) other) const  
*checks if two dates are identical*
- const char \* [operator\(\)](#) (char \*buf) const  
*records this [Date](#) in buffer in format YYYY-MM-DD*
- int [operator-](#) ([Date](#) other) const
- [Date](#) & [operator++](#) ()  
*overloaded prefix incrementation operator for [Date](#)*

#### Static Public Member Functions

- static [Date](#) [getToday](#) ()  
*Get the today date.*

#### Friends

- std::istream & [operator>>](#) (std::istream &is, [Date](#) &d)  
*overloaded operator for inputting [Date](#)*
- std::ostream & [operator<<](#) (std::ostream &os, const [Date](#) &d)  
*overloaded operator for outputting [Date](#)*

### 3.1.1 Constructor & Destructor Documentation

#### 3.1.1.1 Date()

```
Date::Date (
    unsigned short d = 1,
    unsigned short m = 1,
    unsigned short y = 1900 ) [inline]
```

Construct a new [Date](#) object from day, month and year. Default [Date](#) is 1/1/1900.

##### Parameters

<i>d</i>	day
<i>m</i>	month
<i>y</i>	year

### 3.1.2 Member Function Documentation

#### 3.1.2.1 getToday()

```
Date Date::getToday ( ) [static]
```

Get the today date.

##### Returns

[Date](#)

#### 3.1.2.2 operator()()

```
const char * Date::operator() (
    char * buf ) const
```

records this [Date](#) in buffer in format YYYY-MM-DD

##### Parameters

<i>buf</i>	buffer where <a href="#">Date</a> is recorded
------------	---

**Returns**

const char\* pointer to beginning of buf

**3.1.2.3 operator++()**

```
Date & Date::operator++ ( )
```

overloaded prefix incrementation operator for [Date](#)

**Returns**

[Date](#)& reference to this [Date](#)

**3.1.2.4 operator-()**

```
int Date::operator- (
    Date other ) const
```

**Parameters**

<i>other</i>	<a href="#">Date</a>
--------------	----------------------

**Returns**

int difference between of this [Date](#) and other

**3.1.2.5 operator<()**

```
bool Date::operator< (
    Date other ) const
```

checks if this [Date](#) is chronologically before other [Date](#)

**Parameters**

<i>other</i>	compared <a href="#">Date</a>
--------------	-------------------------------

**Returns**

true this [Date](#) is chronologically before other

false this [Date](#) is not chronologically before other

### 3.1.2.6 operator==()

```
bool Date::operator== (
    Date other ) const
```

checks if two dates are identical

#### Parameters

<i>other</i>	compared <a href="#">Date</a>
--------------	-------------------------------

#### Returns

true the dates are identical

false the dates are not identical

### 3.1.2.7 operator>()

```
bool Date::operator> (
    Date other ) const
```

checks if this [Date](#) is chronologically after other [Date](#)

#### Parameters

<i>other</i>	compared <a href="#">Date</a>
--------------	-------------------------------

#### Returns

true this [Date](#) is chronologically after other

false this [Date](#) is not chronologically after other

## 3.1.3 Friends And Related Function Documentation

### 3.1.3.1 operator<<

```
std::ostream & operator<< (
    std::ostream & os,
    const Date & d ) [friend]
```

overloaded operator for outputting [Date](#)

## Parameters

<i>os</i>	output stream
<i>d</i>	<a href="#">Date</a> to be output

## Returns

std::ostream& reference to the output stream

## 3.1.3.2 operator&gt;&gt;

```
std::istream & operator>> (
    std::istream & is,
    Date & d ) [friend]
```

overloaded operator for inputing [Date](#)

## Parameters

<i>is</i>	input stream
<i>d</i>	<a href="#">Date</a> to be input

## Returns

std::istream& reference to the input stream

The documentation for this class was generated from the following files:

- Date.hpp
- Date.cpp

## 3.2 Hotel Class Reference

### Public Member Functions

- [Hotel](#) (std::string hotelDataFile)  
*Construct a new [Hotel](#) object.*
- **Hotel** (const [Hotel](#) &)=delete
- [Hotel](#) & **operator=** (const [Hotel](#) &)=delete
- **~Hotel** ()  
*Destroy the [Hotel](#) object.*
- std::string **getName** () const  
*get the name of this [Hotel](#)*
- void **nextDay** ()  
*advance to the nextDay*

- bool `reserveRoom` (unsigned number, `Date` from, `Date` to, `std::string` name="-", `std::string` note="None\n")  
*makes a new `Reservation` for particular `Room` and period with options for name of guest and notes to the `Reservation`*
- `Hotel` & `showAvailableRooms` (`std::ostream` &, `Date`)  
*output to stream all available rooms for a particular `Date`*
- bool `freeRoom` (unsigned number)  
*tries to free `Room` with particular ID*
- `Hotel` & `getReport` (`Date` from, `Date` to)  
*Creates report for the usage of this `Hotel`'s rooms in the period from-to. Report written in file named "report-YYYY-MM-DD.txt" where YYYY-MM-DD is the beginning of the period.*
- unsigned `searchRoom` (unsigned minBeds) const
- bool `serviceRoom` (unsigned number, `Date` from, `Date` to, `std::string` note)  
*plans maintenance for particular `Room` and period leaving note for the service*

## Static Public Member Functions

- static `Date` `today` ()  
*get today's `Date` according to all `Hotels`*

## 3.2.1 Constructor & Destructor Documentation

### 3.2.1.1 `Hotel()`

```
Hotel::Hotel (
    std::string hotelDataFile )
```

Construct a new `Hotel` object.

#### Parameters

<code>hotelDataFile</code>	path to file where rooms are recorded
----------------------------	---------------------------------------

## 3.2.2 Member Function Documentation

### 3.2.2.1 `freeRoom()`

```
bool Hotel::freeRoom (
    unsigned number )
```

tries to free `Room` with particular ID

## Parameters

<i>number</i>	Room's ID
---------------	-----------

## Returns

true room is now free  
false room not found

**3.2.2.2 getName()**

```
std::string Hotel::getName ( ) const [inline]
```

get the name of this [Hotel](#)

## Returns

std::string

**3.2.2.3 getReport()**

```
Hotel & Hotel::getReport (
    Date from,
    Date to )
```

Creates report for the usage of this [Hotel](#)'s rooms in the period from-to. Report written in file named "report-YYYY-MM-DD.txt" where YYYY-MM-DD is the beginning of the period.

## Parameters

<i>from</i>	beginning of period
<i>to</i>	end of period

## Returns

[Hotel](#)& this [Hotel](#)

**3.2.2.4 reserveRoom()**

```
bool Hotel::reserveRoom (
    unsigned number,
```

```

    Date from,
    Date to,
    std::string name = "-",
    std::string note = "None\n" )

```

makes a new [Reservation](#) for particular [Room](#) and period with options for name of guest and notes to the [Reservation](#)

#### Parameters

<i>number</i>	of the desired <a href="#">Room</a>
<i>from</i>	accomodation <a href="#">Date</a>
<i>to</i>	leaving <a href="#">Date</a>
<i>name</i>	guest's name
<i>note</i>	note to the reservation

#### Returns

true successfull reservation  
false failed reservation (not made)

### 3.2.2.5 serviceRoom()

```

bool Hotel::serviceRoom (
    unsigned number,
    Date from,
    Date to,
    std::string note )

```

plans maintenance for particular [Room](#) and period leaving note for the service

#### Parameters

<i>number</i>	<a href="#">Room</a> 's ID
<i>from</i>	beginning of period
<i>to</i>	end of periof
<i>note</i>	any notes to the service

#### Returns

true service planned successfully  
false service planning failed (room not found or is reserved for the period)

### 3.2.2.6 showAvailableRooms()

```

Hotel & Hotel::showAvailableRooms (
    std::ostream & os,
    Date d )

```



output to stream all available rooms for a particular [Date](#)

Returns

[Hotel](#)& this [Hotel](#)

### 3.2.2.7 today()

```
static Date Hotel::today ( ) [inline], [static]
```

get today's [Date](#) according to all Hotels

Returns

[Date](#)

The documentation for this class was generated from the following files:

- Hotel.hpp
- Hotel.cpp

## 3.3 HotelBuilding Class Reference

### Public Member Functions

- **HotelBuilding** (std::ifstream &ifs)
- **HotelBuilding** (const [HotelBuilding](#) &other)=delete
- [HotelBuilding](#) & **operator=** ([HotelBuilding](#) &other)=delete
- size\_t **getRoomCount** () const
- [Room](#) \* **operator[]** (unsigned roomNumber) const
- void **newDate** ([Date](#) d)
- void **showAvailableRooms** (std::ostream &os, [Date](#) d) const
- void **createReport** ([Date](#) from, [Date](#) to) const

### Friends

- class **RoomAnalyzer**

The documentation for this class was generated from the following files:

- HotelBuilding.hpp
- HotelBuilding.cpp

## 3.4 Reservation Class Reference

### Public Member Functions

- **Reservation** (std::string name, [Date](#) f, [Date](#) t, std::string n="None.\n", bool s=false)
- **Reservation** (const [Reservation](#) &)=delete
- [Reservation](#) & **operator=** (const [Reservation](#) &)=delete
- bool **isActive** () const
- bool **isPast** () const
- bool **isServiced** () const
- [Date](#) **getFrom** () const
- [Date](#) **getTo** () const
- unsigned **getNights** () const
- void **onDate** ([Date](#) d)
- ReservationState **stateOnDate** ([Date](#)) const
- bool **LeavingInAdvance** ([Date](#))

The documentation for this class was generated from the following files:

- Reservation.hpp
- Reservation.cpp

## 3.5 Room Class Reference

### Public Member Functions

- [Room](#) (unsigned n, unsigned bC)  
*Construct a new [Room](#) object.*
- **Room** (const [Room](#) &)=delete  
*forbidden copying of rooms*
- [Room](#) & **operator=** (const [Room](#) &)=delete  
*forbidden copying of rooms*
- **~Room** ()  
*Destroy the [Room](#) object.*
- unsigned **getNumber** () const
- unsigned **getBedCount** () const
- bool **isFreeNow** () const
- bool **freeRoom** ([Reservation](#) \*&currentRes)  
*try to free this room*
- void **changeLeaving** ([Reservation](#) \*, [Date](#) newDate)
- void **newDate** ([Date](#))  
*apply new [Date](#) to state of all reservations and respectively of the room availability*
- bool **isFreeOnDate** ([Date](#)) const  
*see if this room is free in certain date*
- void **showReservationsInPeriod** (std::ostream &os, [Date](#) from, [Date](#) to) const
- bool **addReservation** (std::string name, std::string note, [Date](#) from, [Date](#) to)
- bool **closeForService** (std::string note, [Date](#) from, [Date](#) to)

## 3.5.1 Constructor & Destructor Documentation

### 3.5.1.1 Room()

```
Room::Room (
    unsigned n,
    unsigned bC )
```

Construct a new [Room](#) object.

#### Parameters

<i>n</i>	number of constructed <a href="#">Room</a>
<i>bC</i>	number of beds in constructed <a href="#">Room</a>

## 3.5.2 Member Function Documentation

### 3.5.2.1 freeRoom()

```
bool Room::freeRoom (
    Reservation *& currentRes )
```

try to free this room

#### Returns

true sucesfully freed room  
false room is already free

### 3.5.2.2 isFreeOnDate()

```
bool Room::isFreeOnDate (
    Date d ) const
```

see if this room is free in certain date

#### Returns

true the room is free  
false the room is taken

The documentation for this class was generated from the following files:

- [Room.hpp](#)
- [Room.cpp](#)

## 3.6 RoomAnalyzer Class Reference

### Static Public Member Functions

- static [Room](#) \* **suggest** ([HotelBuilding](#) &hB, unsigned beds, [Date](#) from, [Date](#) to)

The documentation for this class was generated from the following files:

- RoomAnalyzer.hpp
- RoomAnalyzer.cpp

## Chapter 4

# File Documentation

### 4.1 Date.hpp

```
1 #ifndef __DATE_HPP
2 #define __DATE_HPP
3 #include <iostream>
4 #include <ctime>
5
10 const unsigned daysFromBeginning[] = {0, 31, 59, 90, 120, 151, 181, 212, 243, 273, 304, 334};
11
12 class Date
13 {
14     unsigned short day, month, year;
15     bool isValid() const;
16     bool isLeap(unsigned y) const;
17
18 public:
19     Date(unsigned short d = 1, unsigned short m = 1, unsigned short y = 1900) : day(d), month(m), year(y)
20     {}
21     bool operator<(Date other) const;
22     bool operator<=(Date other) const;
23     bool operator>(Date other) const;
24     bool operator>=(Date other) const;
25     bool operator==(Date other) const;
26     const char *operator() (char *buf) const;
27     int operator-(Date other) const;
28     Date &operator++();
29
30     static Date getToday();
31
32 friend std::istream &operator>(std::istream &is, Date &d);
33 friend std::ostream &operator<<(std::ostream &os, const Date &d);
34 };
35
36 #endif
```

### 4.2 Hotel.hpp

```
1 #ifndef __HOTEL_HPP
2 #define __HOTEL_HPP
3 #include "Types.hpp"
4 #include "Date.hpp"
5 #include "Room.hpp"
6 #include "Reservation.hpp"
7 #include "HotelBuilding.hpp"
8 #include <string>
9
17 std::string readFromIstream(std::istream &ifs, size_t len);
18
19 class Hotel
20 {
21     std::string name;
22
23     static Date now;
24
25     HotelBuilding *building;
26
27 }
```

```

39 public:
40     Hotel() = delete;
41
42     Hotel(std::string hotelDataFile);
43     Hotel(const Hotel &) = delete;
44     Hotel &operator=(const Hotel &) = delete;
45
46     ~Hotel();
47
48     static Date today() { return now; }
49
50     std::string getName() const { return name; }
51
52     void nextDay();
53
54     bool reserveRoom(unsigned number, Date from, Date to, std::string name = "-", std::string note =
55         "None\n");
56
57     Hotel &showAvailableRooms(std::ostream &, Date);
58
59     bool freeRoom(unsigned number);
60
61     Hotel &getReport(Date from, Date to);
62     unsigned searchRoom(unsigned minBeds) const;
63
64     bool serviceRoom(unsigned number, Date from, Date to, std::string note);
65 };
66 #endif

```

## 4.3 HotelBuilding.hpp

```

1 #ifndef __HOTELBUILDING_HPP
2 #define __HOTELBUILDING_HPP
3 #include "Types.hpp"
4 #include "Room.hpp"
5 // #include "RoomAnalyzer.hpp"
6 #include <fstream>
7
8 class HotelBuilding
9 {
10     Room **rooms;
11     size_t size;
12
13 public:
14     HotelBuilding(std::ifstream &ifs); // todo String
15     HotelBuilding(const HotelBuilding &other) = delete;
16     HotelBuilding &operator=(HotelBuilding &other) = delete;
17     ~HotelBuilding();
18
19     size_t getRoomCount() const { return size; }
20
21     Room *operator[](unsigned roomNumber) const;
22
23     void newDate(Date d);
24
25     void showAvailableRooms(std::ostream &os, Date d) const;
26
27     void createReport(Date from, Date to) const;
28
29     friend class RoomAnalyzer;
30 };
31 #endif

```

## 4.4 Reservation.hpp

```

1 #ifndef __RESERVATION_HPP
2 #define __RESERVATION_HPP
3 #include "Types.hpp"
4 #include "Room.hpp"
5 #include "Date.hpp"
6 #include "Hotel.hpp"
7 #include <cstring>
8 #include <cassert>
9 #include <fstream>
10 #include <string>
11
12 enum ReservationState

```

```

13 {
14     UNKNOWN = 0,
15     PAST,
16     ACTIVE,
17     FUTURE
18 };
19
20 class Reservation
21 {
22     std::string guestName, note;
23     Date from, to;
24     ReservationState state;
25     bool service;
26
27 public:
28     Reservation(std::string name, Date f, Date t, std::string n = "None.\n", bool s = false);
29     Reservation(const Reservation &) = delete;
30     Reservation &operator=(const Reservation &) = delete;
31
32     bool isActive() const { return state == ACTIVE; }
33     bool isPast() const { return state == PAST; }
34     bool isServiced() const { return service; }
35     Date getFrom() const { return from; }
36     Date getTo() const { return to; }
37     unsigned getNights() const { return to - from; }
38
39     void onDate(Date d);
40
41     ReservationState stateOnDate(Date) const;
42
43     bool LeavingInAdvance(Date);
44 };
45
46 std::ostream &operator<<(std::ostream &, const Reservation &);
47
48 #endif

```

## 4.5 Room.hpp

```

1 #ifndef __ROOM_HPP
2 #define __ROOM_HPP
3 #include <iostream>
4 #include <string>
5 #include "Types.hpp"
6 #include "Reservation.hpp"
7 #include "Hotel.hpp"
8
9
10
11
12
13 const size_t INIT_CAPACITY = 2;
14
15 class Room
16 {
17     unsigned number;
18     unsigned bedCount;
19     Reservation **reservations;
20     size_t resCount, resCapacity;
21
22     Reservation **pastReservations;
23     size_t pastCount, pastCapacity;
24
25     void expand(Reservation **&arr, size_t &size, size_t &capacity);
26     void shrink(Reservation **&arr, size_t &size, size_t &capacity);
27
28     unsigned daysTakenInPeriod(Date from, Date to) const;
29
30     bool newReservation(std::string name, std::string note, Date from, Date to, bool service);
31
32 public:
33     Room(unsigned n, unsigned bC);
34     Room(const Room &) = delete;
35     Room &operator=(const Room &) = delete;
36     ~Room();
37
38     unsigned getNumber() const { return number; }
39     unsigned getBedCount() const { return bedCount; }
40     bool isFreeNow() const;
41
42     bool freeRoom(Reservation *&currentRes);
43     void changeLeaving(Reservation *, Date newDate); // todo must be private
44
45     void newDate(Date);
46
47     bool isFreeOnDate(Date) const;
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```

```
115     void showReservationsInPeriod(std::ostream &os, Date from, Date to) const;
116
117     bool addReservation(std::string name, std::string note, Date from, Date to);
118
119     bool closeForService(std::string note, Date from, Date to);
120 };
121
122 std::ostream &operator<<(std::ostream &os, const Room &R);
123
124 #endif
```

## 4.6 RoomAnalyzer.hpp

```
1 #ifndef __ROOMANALYZER_HPP
2 #define __ROOMANALYZER_HPP
3 #include "Types.hpp"
4 #include "HotelBuilding.hpp"
5 #include "Date.hpp"
6 const size_t DISPLAY = 5;
7
8 class RoomAnalyzer
9 {
10     static void sortRooms(HotelBuilding &hB, float *score);
11
12 public:
13     static Room *suggest(HotelBuilding &hB, unsigned beds, Date from, Date to);
14 };
15
16 #endif
```

## 4.7 Types.hpp

```
1 #ifndef __TYPES_HPP
2 #define __TYPES_HPP
3
4 class Date;
5 class Room;
6 class HotelBuilding;
7 class Reservation;
8 class Hotel;
9
10 #endif
```



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