

i. Write the constructor and the destructor of the dynamic class (4 pts)

-----Constructor-----	-----Destructor-----
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ii. Write the overloaded assignment operator (2 pts)

iii. Write the operator <<(2 pts)

iv. Write the main function by declaring , initializing and printing dynamic objects of the class dol.(10pts)

v- For the declaration give the output
Time t(100),u(40);
cout << t+u << " " << int(t+u);

vi- For the question e above which overloaded function are called
I - cout << t+u
II- cout << int(t+u);

vii- Trace the main program and give output
void main()
{
Time getup(8,45),lunch(1,0,"pm"),gotobed;
cout<<"get up at"<<getup;
cout<<"classes starts at "<<getup+90;
cout <<"lunch at "<<lunch;
cin>>gotobed; //input 22:30
cout <<"go to bed at"<<gotobed <<endl;
}

viii- Which function gives a conversion from integer to Time?

ix- Which function gives a conversion from Time to Integer?

2-The following is a declaration of the class Square (by using composition with the class Rectangle)
(16 pts)

```
class Square  
{  
private:  
    Rectangle sq;  
public:  
    Square (double len);  
    double getlength();  
    void setlength(double len);  
    double perimeter();  
    double area();  
    double diagonal();  
};
```

i. Write the constructor in two methods: using an assignment of an object (not copy constructor) and using an initialization directly through the header of the constructor. (4 pts)

Method 1	Method 2

Part II(35 pts)

The class CompactChar stores a character along with its repeat count. For instance, the string "...", can be represented by a CompactChar object with character "." And repeat count 3 times.

```
class CompactChar
{
    private:
        char ch;
        int repeatcount;
    public:
        CompactChar(char c, int repeatcnt);
        char getchar();
        int getrepeatcount();
};
```

- i. Declare two CompactChar object that correspond to strings of repeating characters "xxxx" and "?"
- ii. Add an overloaded version of the relational operator == as a friend of the class. The operator compares only the character field.
- iii. Add an overloaded version of the relational operator < as a friend of the class. The operator compares the repeatcount of the two objects (if you have time do the same function but as a member function).
- iv. As a friend, declare an overloaded output operator << that outputs an object in the format ch(repeatcount).
For example from the question (a) above the output should be x(4) and?(1).
- v. The following is a declaration of a conversion operator String() that takes a CompactChar object and converts it to a string consisting of the character repeated repeatCount times

```
operator String();
CompactChar ccobj('a',5),repeatperiod('.',3);
String S;
S=String(ccobj); // s="aaaaa";
S=repeatperiod; //s="..."
```

Good Luck