ECE2036: Week 7 – Principle of Least Privilege and **const** Designation

Reading: Reading in D&D is moving to Chapter 9 and 10

```cpp
#include <iostream>
#include <iomanip>
using namespace std;

//--------- class interface for Time class definition
class Time
{
public:
  //illustrating concept 1. Constructor with default parameters
  Time(int=0,int=0,int=0);
  // Time(int,int); //Can I have this one too?
  // Time();  //Can I have this one too?

  //set functions
  void setTime(int,int,int);
  void setHour(int);
  void setMinute(int);
  void setSecond(int);

  //get functions
  int getHour();
  int getMinute();
  int getSecond();

  //general member functions
  void printTime();

private:
  int hour; //0-23 hours
  int minute; //0 to 59
  int second; //0 to 59

}; //end of time class

//--------- Implementation of Time class member functions

Time::Time(int hr, int min, int sec)  //These have default parameters in class interface
{
  setTime(hr,min,sec);
  cout << "The time object (with constructor 1) ";
  printTime();
  cout << " has been created" << endl;
} //end of constructor

//--- mini pop quiz  Can you include also have the following constructor
// -- in this code?
//Time::Time(int hr, int min)
//{
//  setTime(hr,min,59);
//  cout << "The time object (with constructor 2) ";
//  printTime();
//  cout << " has been created" << endl;
//}

void Time::setTime(int hr, int min, int sec)
{
  setHour(hr);
  setMinute(min);
  setSecond(sec);
```

```cpp
}//end setTime

void Time::setHour(int hr)
{
  if (hr >= 0 && hr <= 23)
    hour = hr;
  else
    cerr << "Error in hour input!! " << endl;
}

void Time::setMinute(int min)
{
  if (min >=0 && min <=59)
    minute = min;
  else
    cerr << "Error in minutes input!!" <<endl;
} //end of setMinute

void Time::setSecond(int sec)
{
  if (sec >=0 && sec <=59)
    second = sec;
  else
    cerr << "Error in second input!!" <<endl;
} //end of setMinute

int Time::getHour()
{
  return hour;
}

int Time::getMinute()
{
  return minute ;
}

int Time::getSecond()
{
  return second;
}

void Time::printTime()
{
 //This prints the time with no newline character
 cout << setfill('0') << setw(2) << getHour() << ":"
    <<setw(2) << getMinute() << ":"
    <<setw(2) << getSecond(); //no endl
}//end printTime

//--------- main function that instantiates objects
int main()
{
system ("clear");

Time time1;
Time time2(21); //specify hour only
Time time3(21,45); //specify hour and minute
Time time4(3,30,30); //specify all!
const Time time5;

//I cannot do the following code without making changes
//The question is why?
cout << "The hour is: " << time5.getHour() << endl;

}
```