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// year 2016
// following will go in a header file
// we are supposed to think of the event wattageChanged
#include<iostream>
#include<string.h>
using namespace std;
class Bulb;
class BulbEvent
{
private:
Bulb *bulb;
int oldWattage;
int newWattage;
public:
BulbEvent(Bulb *,int,int);
int getOldWattage();
int getNewWattage();
Bulb * getBulb();
};
BulbEvent::BulbEvent(Bulb *bulb,int oldWattage,int newWattage)
{
this->bulb=bulb;
this->oldWattage=oldWattage;
this->newWattage=newWattage;
}
Bulb * BulbEvent::getBulb()
{
return this->bulb;
}
int BulbEvent::getOldWattage()
{
return this->oldWattage;
}
int BulbEvent::getNewWattage()
{
return this->newWattage;
}
class WattageChangedListener
{
public:
virtual void wattageChanged(BulbEvent *)=0;
};
class Bulb
{
private:
int w;
char brand[21];
```

```
WattageChangedListener *target;
public:
Bulb(const char *);
void setWattage(int);
int getWattage();
void setWattageChangedListener(WattageChangedListener *);
const char * getBrand();
};
// following will go in  a cpp file and we will compile
// it to create a library file
Bulb::Bulb(const char *brand)
{
this->w=0;
strcpy(this->brand,brand);
this->target=NULL;
}
void Bulb::setWattage(int w)
{
if(this->w==w) return;
if(w>0 && w<=240)
{
int oldWattage=this->w;
this->w=w;
if(target!=NULL)
{
BulbEvent *bulbEvent;
bulbEvent=new BulbEvent(this,oldWattage,this->w);
target->wattageChanged(bulbEvent);
}
}
}

int Bulb::getWattage()
{
return this->w;
}
const char * Bulb::getBrand()
{
return this->brand;
}

void Bulb::setWattageChangedListener(WattageChangedListener *target)
{
this->target=target;
}
// the following code will be written in 2020
class aaa:public WattageChangedListener
```

```
{
private:
Bulb *b1;
Bulb *b2;
public:
aaa()
{
b1=new Bulb("Philips");
b2=new Bulb("Wipro");
b1->setWattageChangedListener(this);
b2->setWattageChangedListener(this);
}
void sam()
{
b1->setWattage(60);
b2->setWattage(100);
cout<<b1->getWattage()<<endl;
cout<<b2->getWattage()<<endl;
}
void wattageChanged(BulbEvent *ev)
{
Bulb *b=ev->getBulb();
cout<<"Wattage of Bulb with brand as "<<b->getBrand()<<" has changed from "<<ev-
>getOldWattage()<<" to "<<ev->getNewWattage()<<endl;
}
};
int main()
{
aaa *a;
a=new aaa;
a->sam();
return 0;
}
```