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// Programming Techniques
Exercises Class # 7

Master Programme in Mathematical Finance
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ISEG-UL

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# Overview

- Class Technicalities (Operator Overloading)
  - Assignment Operator
  - Sum and Attribution Operator
  - Input and Output Operator

Bibliography:
- Stroustrup, Bjarne, Programming Principles and Practice Using C++, Second Edition, Addison-Wesley, 2014.

# Assignment Operator

```
class CRectangle{
    double width,height;
  public:
    CRectangle operator=(const CRectangle & );
};

CRectangle CRectangle::operator=(const CRectangle & A){
    width=A.width;
    height=A.height;
    return(*this);
}

int main(){
    CRectangle A(3,4);
    CRectangle B(0,0);
    B=A;
}
```

# Sum and Attribution Operator

```
class CRectangle{
    double width,height;
  public:
    CRectangle operator+=(const CRectangle & );
};

CRectangle CRectangle::operator+=(const CRectangle & A){
    width+=A.width;
    height+=A.height;
    return(*this);
}

int main(){
    CRectangle A(3,4);
    CRectangle B(0,0);
    B+=A;
}
```

# Input Operator

```cpp
class CRectangle{
    double width,height;
  public:
        friend istream & operator>>(istream &, CRectangle &); //input operator
};

istream & operator>>(istream &is, CRectangle &A){
    is>>A.width;
    is>>A.height;
    return(is);
}

int main(){
    CRectangle B(0,0);
    cin>>B;
}
```

# Output Operator

```cpp
class CRectangle{
    double width,height;
  public:
    friend ostream & operator<<(ostream &, const CRectangle &);
};

ostream & operator<<(ostream &os, const CRectangle &A){
    os<<"width: "<<A.width<<" height "<<A.height<<endl;
    return(os);
}

int main(){
    CRectangle A(3,4);
        cout<<A;
}
```

1. Complete the program rectangle.pro by including:
   ▶ The assignment operator
   ▶ The sum and attribution operator (+=)
   ▶ The subtraction and attribution operator(-=)
   ▶ An input operator
   ▶ An output operator