**public** **class** **AluminumBar** {

**private** **double** length, side;

**public** **AluminumBar**(**double** length, **double** side) {

**this**.length = length;

**this**.side = side;

}

**public** **double** **getLength**() {

**return** length;

}

**public** **double** **getSide**(){

**return** side;

}

**public** **double** **getVolume**() {

**return** length \* side \* side;

}

**public** **double** **getSurfaceArea**() {

**return** 2 \* side \* side + 4 \* length \* side;

}

**public** **void** **addToLength**(**double** amount) {

**if**(-amount < length) {

length = length + amount; //or use += operator

} **else** {

length = 0; //because length cannot be negative

}

}

}

**import** javax.swing.JOptionPane;

**public** **class** **AluminumBarDemo** {

**public** **static** **void** **main**(**String** [] args) {

**String** **value**;

value = **JOptionPane**.*showInputDialog*("Enter length of the bar: ");

**double** **length** = **Double**.*parseDouble*(value);

value = **JOptionPane**.*showInputDialog* ("Enter side of the bar: ");

**double** **side** = **Double**.*parseDouble*(value);

**AluminumBar** **b** = **new** AluminumBar (length, side);

**JOptionPane**.*showMessageDialog*(**null**, "volume: " + b.getVolume());

**JOptionPane**.*showMessageDialog* (**null**, "surface area: " + b.getSurfaceArea());

value = **JOptionPane**.*showInputDialog* ("How much longer " + "should the bar be? ");

**double** **addition** = **Double**.*parseDouble*(value);

b.addToLength(addition);

**JOptionPane**.*showMessageDialog* (**null**, "length: " + b.getLength());

**JOptionPane**.*showMessageDialog* (**null**, "volume: " + b.getVolume());

**JOptionPane**.*showMessageDialog* (**null**, "surface area: " + b.getSurfaceArea());

}

}