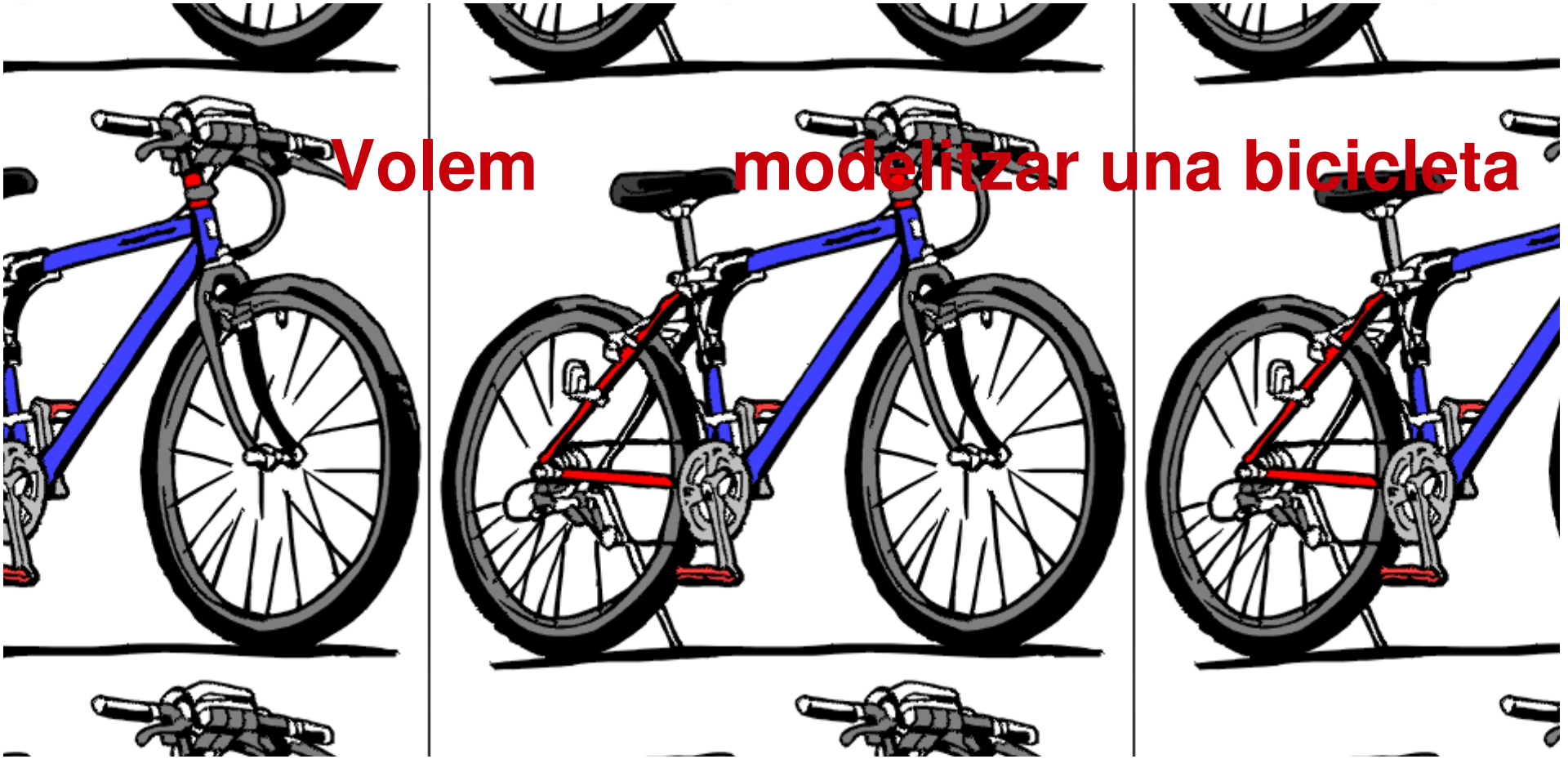
Classe Bicycle



Classe Bicycle

- Característiques de la modelització :
  - Tindrà plats i pinyons els quals podran canviar-se si la bicicleta es mou
  - El nombre mínim de pinyons i plats és 1
  - La velocitat màxima de la bicicleta serà de 100
  - La acceleració o desacceleració serà sempre de 5
  - Una bicicleta serà d'un model determinat
  - Una bicicleta serà propietat d'una persona determinada

Classe Bicycle

- Constructors : ?
- Atributs : ?
- Mètodes : ?

Classe Bicycle

```
/** The bicycle's model. */
private String model;
/** The engaged front sprocket. */
private int frontSprocket;
/** The engaged rear sprocket. */
private int rearSprocket;
/** The number of front sprockets the bicyle has. */
private final int nFrontSprockets;
/** The number of rear sprockets the bicyle has. */
private final int nRearSprockets;
/** The bicycle's speed in km/h. */
private double v;
/** The maximum speed of the bicycle */
private final static int VMAX = 100;
/** Increment of the bicycle speed */
private final static int DV = 5;
```

Classe Bicycle

```
public Bicycle() {
    this.model = "Mountain bike";
    this.frontSprocket = 3;
    this.rearSprocket = 1;
    this.nFrontSprockets = 3;
    this.nRearSprockets = 7;
    this.v = 0;
}

public Bicycle(int nFrontSprockets, int nRearSprockets, double v) {
    this.model = "Mountain bike";
    this.nFrontSprockets = nFrontSprockets;
    this.nRearSprockets = nRearSprockets;
    this.frontSprocket = nFrontSprockets;
    this.rearSprocket = 1;
    this.v = v;
}

public Bicycle(String model, int frontSprocket, int rearSprocket, int nFrontSprockets, int nRearSprockets, double v) {
    this.model = model;
    this.frontSprocket = frontSprocket;
    this.rearSprocket = rearSprocket;
    this.nFrontSprockets = nFrontSprockets;
    this.nRearSprockets = nRearSprockets;
    this.v = v;
}
```

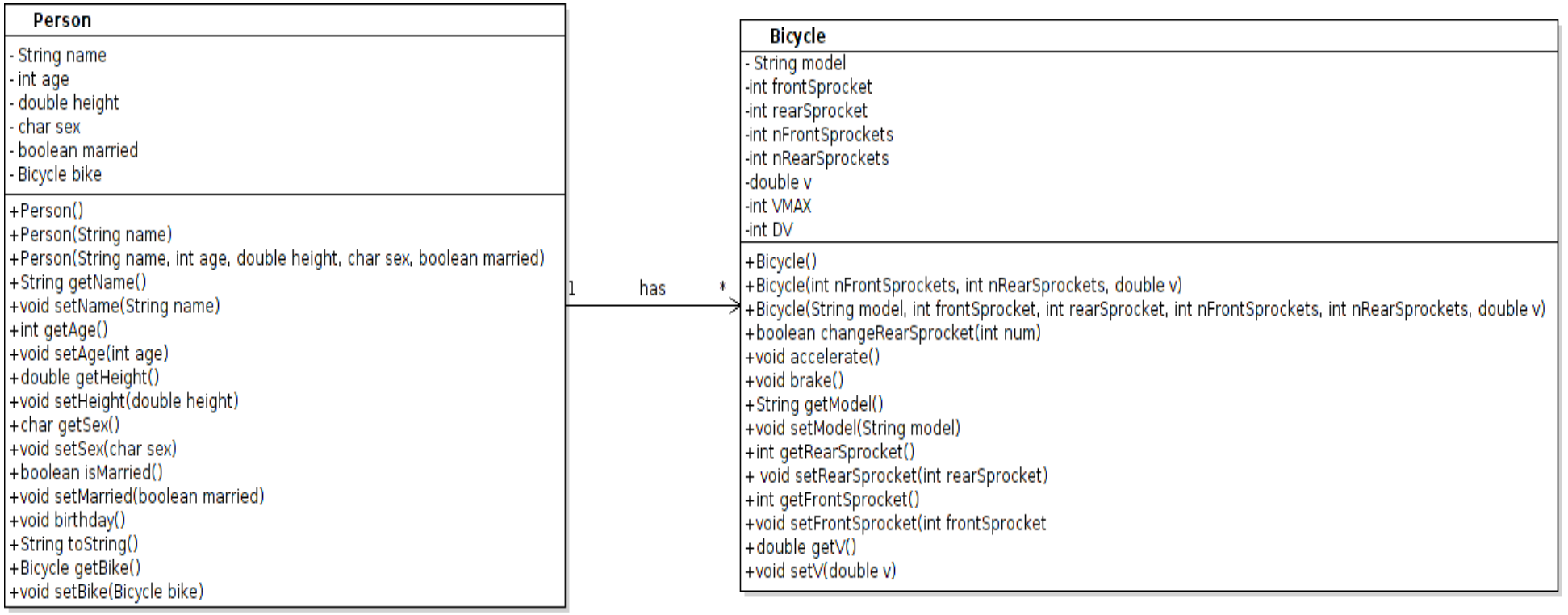
Classe Bicycle

```
public boolean changeFrontSprocket(int n) {
    boolean isChanged = true;
    if (this.frontSprocket < this.nFrontSprockets && n > 0 && this.v > 0) {
        this.frontSprocket++;
    } else if (this.frontSprocket > 1 && n < 0 && this.v > 0) {
        this.frontSprocket--;
    } else {
        isChanged = false;
    }
    return isChanged;
}

public boolean changeRearSprocket(int num) {
    boolean isChanged = true;
    if (rearSprocket < nRearSprockets && num > 0 && v > 0) {
        rearSprocket++;
    } else if (rearSprocket > 1 && num < 0 && v > 0) {
        rearSprocket--;
    } else {
        isChanged = false;
    }
    return isChanged;
}

public void accelerate() {
    double newV = this.v + Bicycle.DV;
    if (newV > Bicycle.VMAX)
        newV = Bicycle.VMAX;
    this.v = newV;
}

public void brake() {
    double newV = this.v - Bicycle.DV;
    if (newV < 0)
        newV = 0;
    this.v = newV;
}
```

Classe Bicycle

```
// Setter and getters
public String getModel() {
    return model;
}

public void setModel(String model) {
    this.model = model.trim();
}

public int getRearSprocket() {
    return rearSprocket;
}

public void setRearSprocket(int rearSprocket) {
    this.rearSprocket = rearSprocket;
}

public int getFrontSprocket() {
    return frontSprocket;
}

public void setFrontSprocket(int frontSprocket) {
    this.frontSprocket = frontSprocket;
}

public double getV() {
    return v;
}

public void setV(double v) {
    this.v = v;
}
```

Classe Person i Bicycle



Classe Person

```java
/** The person's name */
private String name;
/** The person's age */
private int age;
/** The person's height */
private double height;
/** The person's sex. It can be 'M' (man) or 'W' (woman) */
private char sex;
/** Sets whether the person is married or not */
private boolean married;
/** Bike's person */
private Bicycle bike;
```

Classe Person

```java
/**
 * Gets the person's bicycle.
 *
 * @return the bicycle.
 */
public Bicycle getBike() {
    return bike;
}

/**
 * Set a bicycle to the person.
 *
 * @param bike a bicycle.
 */
public void setBike(Bicycle bike) {
    this.bike = bike;
}
```