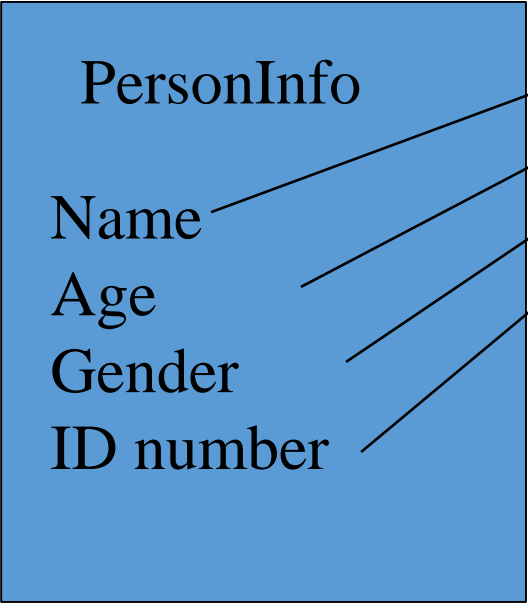


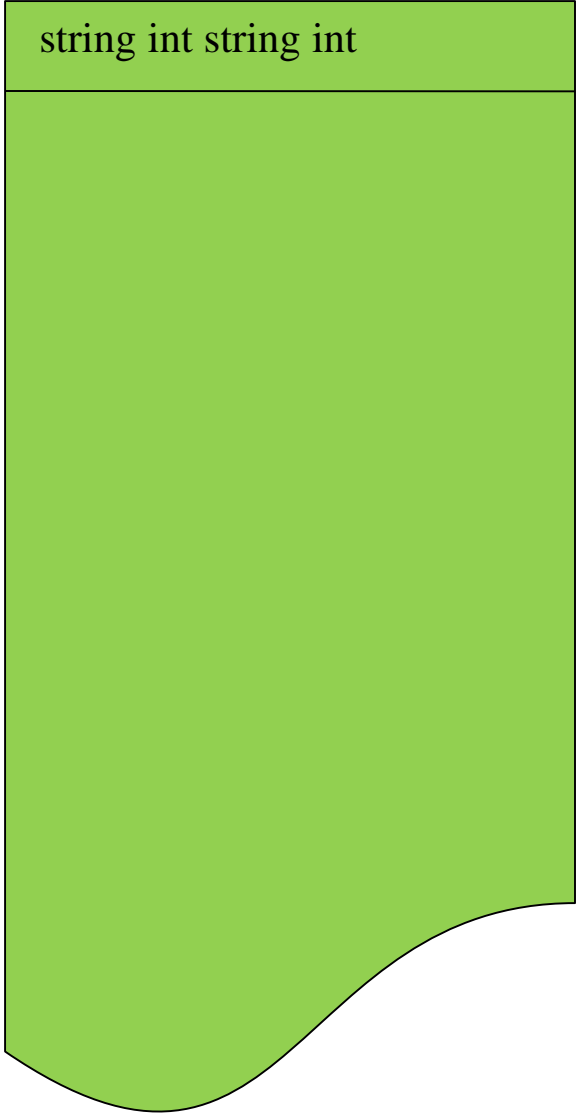
# Serialization

# Serialization

- It is easy to write the individual fields of a *record* object to a file
- For example, we can create a record that stores information about a Person
  - Name
  - Age
  - Gender
  - ID number
  - etc
- We can output each field of this record to a file (either text or binary)

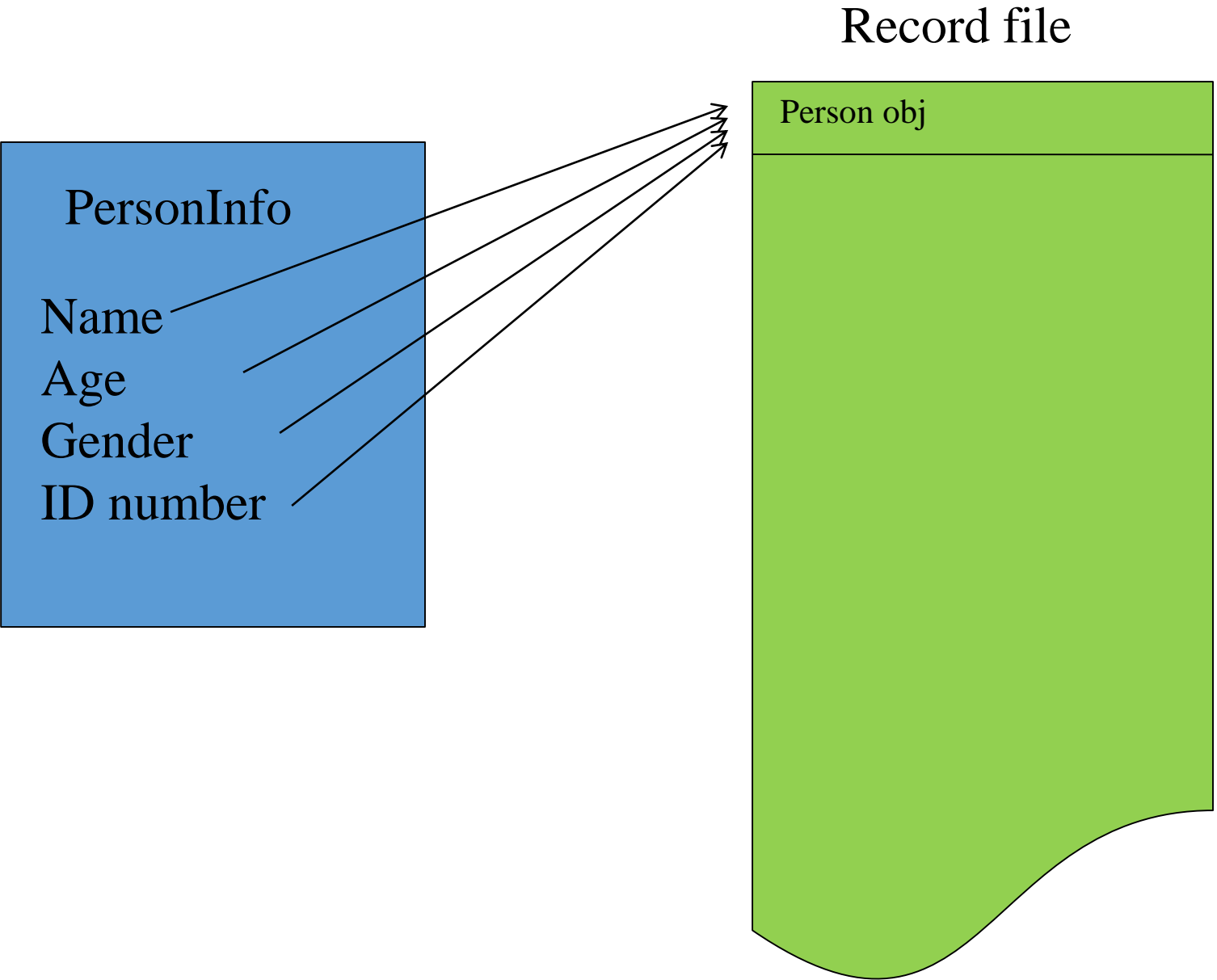


Record file



# Serialization

- In this example, any program that needs to read the file needs to know the format of the data
  - 1 strings, an int, 1 string and then an int
  - Also whether each item is on a separate line
- *Object serialization* allows complete objects to be read or written with a single statement
- A *serialized object* is an object represented as a sequence of bytes
- Information is stored about the data types of the objects instance fields as well as their values
  - Allows the object to be reconstructed (de-serialized) from the file



# Serialization

- To serialize an object, the object class needs to be marked with the *[Serializable]* attribute or needs to implement the *ISerializable* interface
- Requires the *System.Runtime.Serialization* namespace
- Also we require a *BinaryFormatter* object to serialize/de-serialize the object before writing to or reading from file

```
private void button1_Click(object sender, EventArgs e)
{
    String name = textBox1.Text;
    String address = textBox2.Text;
    int id = Convert.ToInt32(textBox3.Text);
    String courseInfo = textBox4.Text;
    StudentInfo s = new StudentInfo(name,address,courseInfo,id);

    FileStream filestream = new FileStream(fileName, FileMode.Create);
    BinaryFormatter bf = new BinaryFormatter();
    bf.Serialize(filestream, s);
    filestream.Close();
    button1.Enabled = true;
}

private void button2_Click(object sender, EventArgs e)
{
    FileStream filestream2 = new FileStream(fileName,FileMode.Open);
    BinaryFormatter bf2 = new BinaryFormatter();
    StudentInfo si= new StudentInfo();
    si = (StudentInfo)bf2.Deserialize(filestream2);
    textBox8.Text = si.Name;
    textBox7.Text = si.Address;
    textBox6.Text = ""+si.ID;
    textBox5.Text = si.CourseInfo;
    filestream2.Close();
}
```