

Software Engineering 301:  
Software Analysis and Design

# Structural modelling example

```
package ca.ucalgary.seng301.mypkg;
```

```
import java.util.ArrayList;
```

```
import java.util.Iterator;
```

```
public class Client {
```

```
    private ArrayList<String> email =  
        new ArrayList<String>();
```

```
    private int id;
```

```
    public Client(int id) {  
        this.id = id;  
    }
```

```
    public int getID() {  
        return id;  
    }
```

```
    public Iterator<String> getEmailAddresses() {  
        return email.iterator();  
    }
```

```
    public void addEmailAddress(String addr) {  
        if(!hasEmailAddress(addr))  
            email.add(addr);  
    }
```

```
    public boolean hasEmailAddress(String addr) {  
        return email.contains(addr);  
    }
```

```
    public void deleteEmailAddress(String addr) {  
        email.remove(addr);  
    }  
}
```

ca.ucalgary.seng301.mypkg

Client

- id: int  
- email: ArrayList<String>  
+ Client(id: int)  
+ getID(): int  
+ getEmailAddresses(): Iterator<String>  
+ addEmailAddress(addr: String): void  
+ hasEmailAddress(addr: String): boolean  
+ deleteEmailAddress(addr: String): void

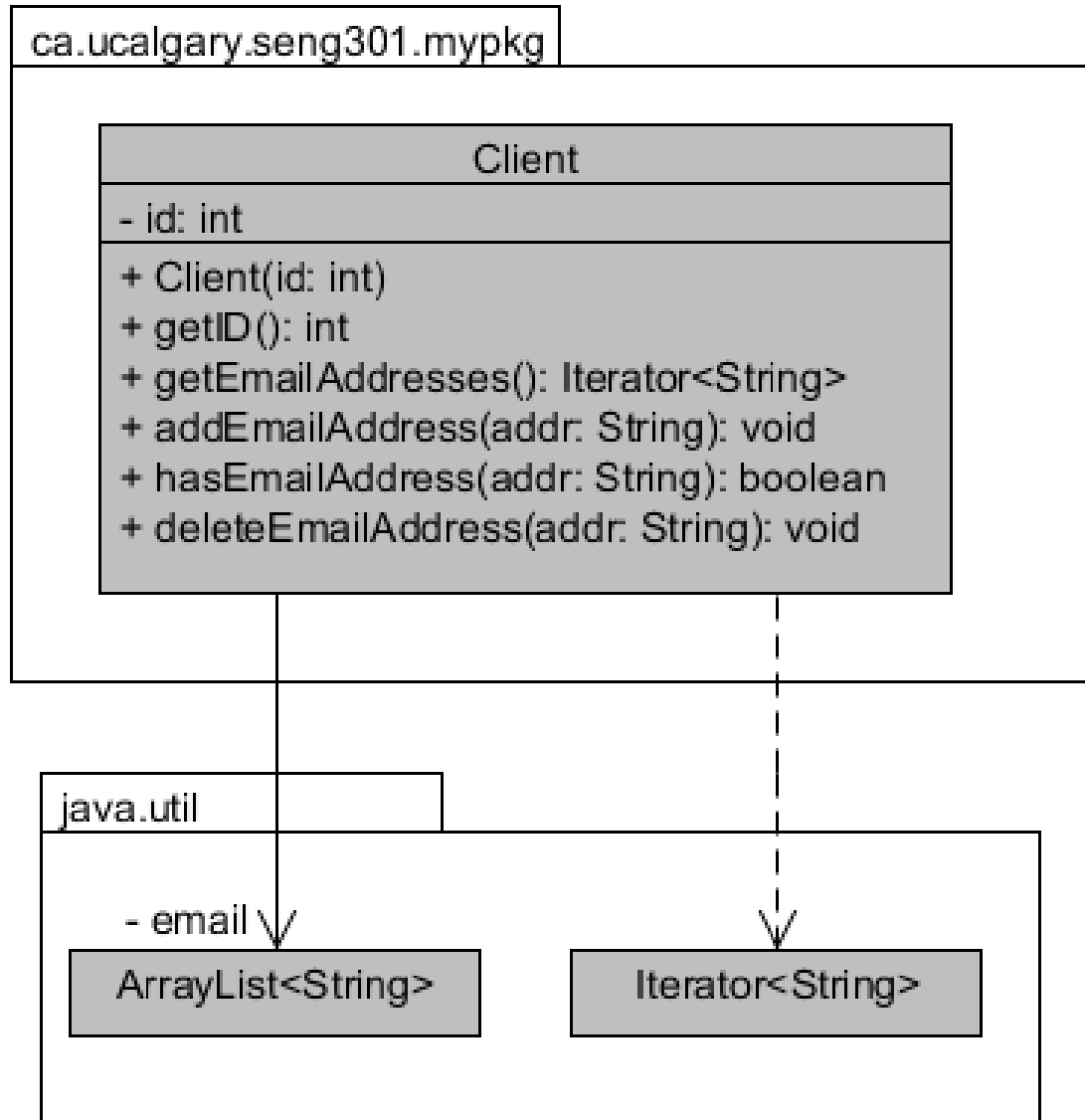
I coloured the classes grey to make them stand out better.

I chose to show all the fields and operations of Client.

java.util

ArrayList<String>

Iterator<String>



I eliminated the attribute on `Client` to add the association with `ArrayList<String>`.

ca.ucalgary.seng301.mypkg

Client

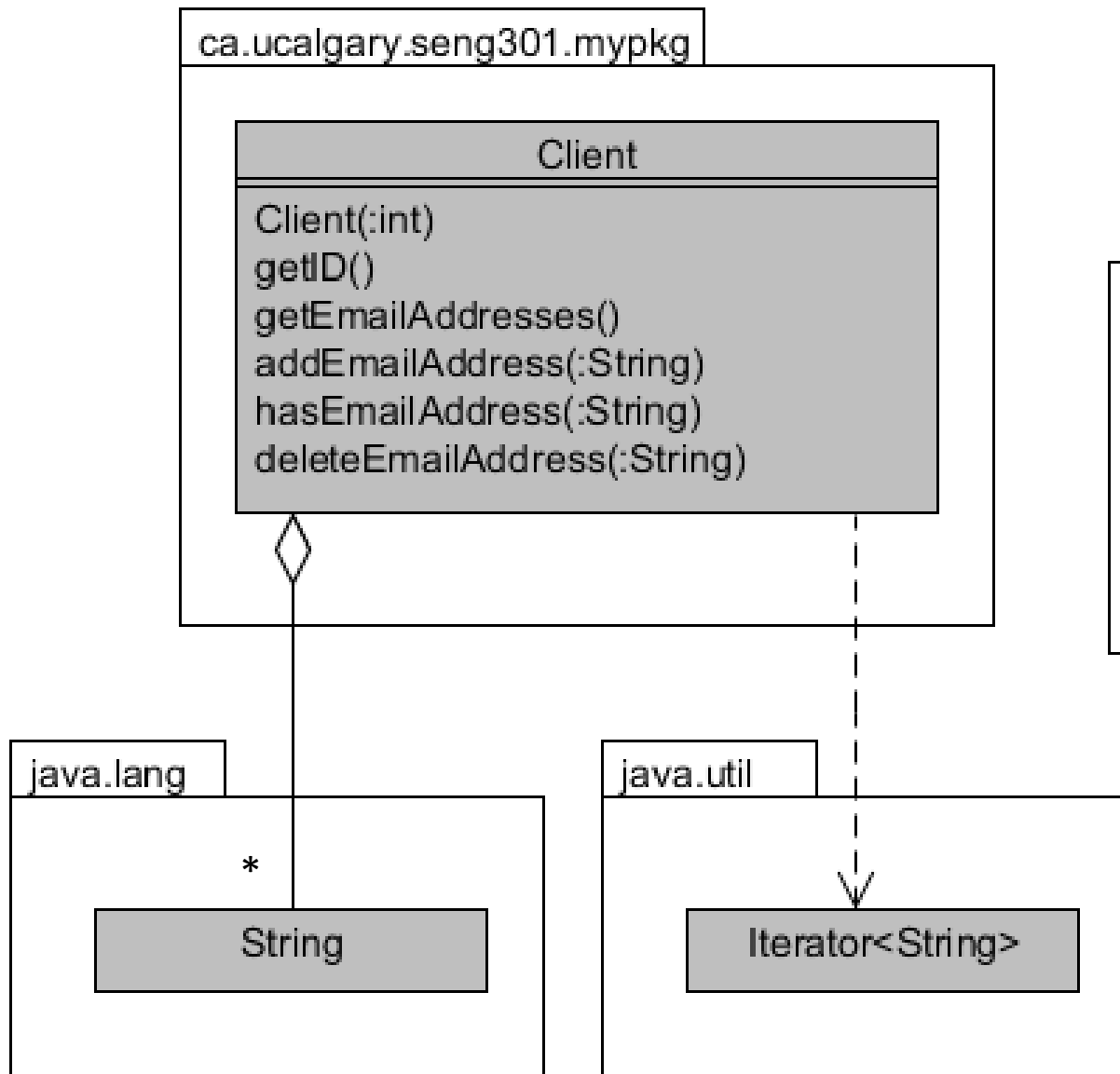
Client(:int)  
getID()  
getEmailAddresses()  
addEmailAddress(:String)  
hasEmailAddress(:String)  
deleteEmailAddress(:String)

I suppressed return  
types and private fields.

java.util

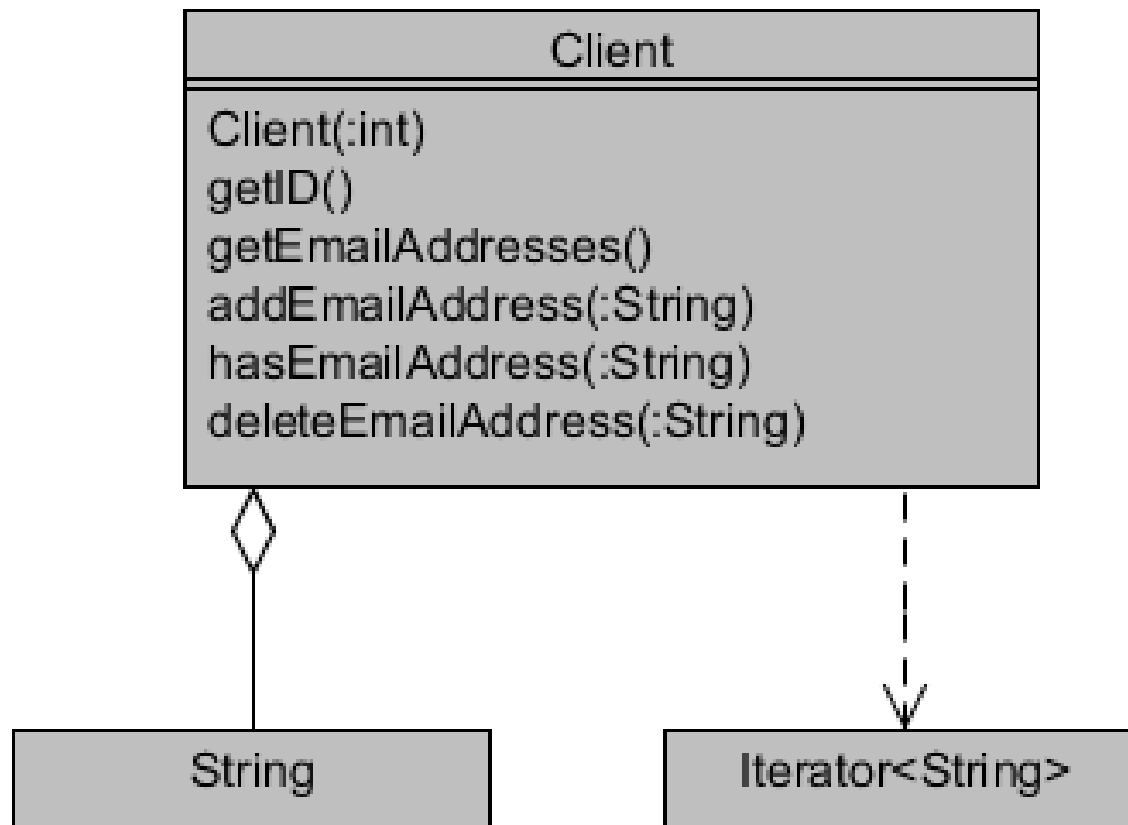
ArrayList<String>

Iterator<String>



Do we really need to know about ArrayList? This diagram says that Client aggregates Strings without saying how.

I added a "\*" multiplicity on the aggregation.



The packages don't tell us a lot here. So there isn't much point in showing them.

I suppressed the multiplicity on the aggregation.