國立屏東大學 資訊工程學系 物件導向程式設計

Person類別範例5

類別繼承

簡介

Person類別是用以對「真實世界(real world)中的「人」進行「抽象對映(mapping abstraction)的定義。

Data Members

- [-] firstname : string
- [-] lastname : string

Member Functions

- [+] set_firstname(string fn) : void –> setter for firstname
- [+] get_firstname():string –> getter for firstname
- [+] set_lastname(string fn) : void –> setter for lastname
- [+] get_lastname():string –> getter for lastname
- [+] showInfo(): void –> print out its information

Constructor and Destructor

- Person() –> set default values of firstname and lastname as “unknown”
- Person(string fn, string ln) –> set firstname and lastname as fn and ln
- ~Person() –> print out that it has been deleted!

Student類別範例

簡介

Student是繼承自Person類別的類別，用以對「真實世界(real world)中的「學生」進行「抽象對映(mapping abstraction)的定義。但比起Person類別Student類別又更為特別一些，它還多了一個名為ID的data member及相關的setter與getter:

Data Members

- [-] firstname : string
- [-] lastname : string
- [-] ID : string

Member Functions

- [+] set_firstname(string fn) : void –> setter for firstname
- [+] get_firstname():string –> getter for firstname
- [+] set_lastname(string fn) : void –> setter for lastname
- [+] get_lastname():string –> getter for lastname
- [+] showInfo(): void –> print out its information
- [+] set_ID(string id): void –> setter for ID
- [+] get_ID(): string –> getter for Id

Constructor and Destructor

None

Source Code

```
#include <iostream>
using namespace std;

#ifndef _PERSON_
#define _PERSON_

class Person
{
private:
  string firstname;
  string lastname;

public:
  Person();
  Person(string, string);
  ~Person();
  void showInfo();
  void set_firstname(string fn);
  string get_firstname();
  void set_lastname(string ln);
  string get_lastname();
};
#endif
```

```
#include "person.h"

Person::~Person()
{
  cout << "A Person is removed." << endl;
}

Person::Person()
{
  cout << "A Person is created." << endl;
}

Person::Person(string fn, string ln)
{
  firstname=fn;
  lastname=ln;
}

void Person::showInfo()
{
  cout << "Name: " << firstname << " " << lastname << endl;
}

void Person::set_firstname(string fn)
{
  firstname=fn;
}

void Person::set_lastname(string ln)
{
  lastname=ln;
}

string Person::get_firstname()
{
  return firstname;
}

string Person::get_lastname()
{
  return lastname;
}
```

```
#ifndef _STUDENT_
#define _STUDENT_
#include "person.h"

class Student : public Person
{
private:
  string ID;
public:
  Student();
//  Student(string fn, string ln, string id);
  ~Student();
  void set_ID(string id);
  string get_ID();
};
#endif
```

```
#include "student.h"

Student::Student()
{
  cout << "A Student is created." << endl;
}

Student::~Student()
{
  cout << "A Student is removed." << endl;
}

void Student::set_ID(string id)
{
  ID=id;
}

string Student::get_ID()
{
  return ID;
}
```

```
#include <iostream>
using namespace std;

#include "student.h"

int main()
{
```

```
  Student *amy = new Student();
  amy->set_firstname("Amy");
  amy->set_lastname("Chang");
  amy->set_ID("s111418099");
  Student *tony = new Student(*amy);
  tony->set_firstname("Tony");
  amy->showInfo();
  tony->showInfo();

  delete amy;
  delete tony;
  return 0;
}
```

```
all: person.o student.o
    g++ main.cpp person.o student.o -o main

person.o: person.cpp person.h
    g++ -c person.cpp
student.o: student.cpp student.h
    g++ -c student.cpp

clean:
    rm -f *.o main *.*~ *~
```

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