

First Name: _____

Last Name: _____

C++ Lab 4 – Constructors and destructors

Considering the next class:

```
class Student{
private:
    char* name;
    char address[50];
    unsigned int age;
public:
    void print(){
        cout<<"Name: "<<this->name<<endl;
        cout<<"Adress: "<<this->address<<endl;
        cout<<"Age: "<<this->age<<endl;
    }
};
```

Analyze the next lines:

	Expected value/error	Actual result/error	Reason for having an error
Student s1;			
s1.print();			
Student* s2 = new Student();			
s2->print();			

If the class is updated to:

```
class Student{
private:
    char* name;
    char address[50];
    unsigned int age;
public:
    Student(unsigned int v_age){
        this->age=v_age;
    }
    void print(){
        cout<<"Name: "<<this->name<<endl;
        cout<<"Adress: "<<this->address<<endl;
        cout<<"Age: "<<this->age<<endl;
    }
};
```

Analyze the next lines:

	Expected value/error	Actual result/error	Reason for having an error
Student s1;			
Student* s2 = new Student();			
Student s3(21);			
s3.print();			
Student* s4 = new Student(22);			
s4->print();			

If the class is updated to:

```
class Student{
private:
    char* name;
    char address[50];
    unsigned int age;
public:
    Student(){
        this->name = new char[strlen("Missing")+1];
        strcpy(this->name, "Missing");
        strcpy(this->address, "Missing");
        this->age=22;
    }
    Student(char* v_name, char* v_address, unsigned int v_age){
        this->name = new char[strlen(v_name)+1];
        strcpy(this->name, v_name);
        strcpy(this->address, v_address);
        this->age=v_age;
    }
    Student(char* v_name, unsigned int v_age=22):age(v_age){
        this->name = new char[strlen(v_name)+1];
        strcpy(this->name, v_name);
        strcpy(this->address,"Missing");
        this->age=v_age;
    }

    void print(){
        cout<<"Name: "<<this->name<<endl;
        cout<<"Adress: "<<this->address<<endl;
        cout<<"Age: "<<this->age<<endl;
    }
    ~Student(){
```

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```

        if(this->name!=NULL){
            delete[] this->name;
        }
    }
};

```

Analyze the next lines:

	Expected value/error	Actual result/error	Reason for having an error
Student s1; s1.print();			
Student* s2 = new Student(); s2->print();			
Student s3("Ion Popescu", "Romana, No 7", 23); s3.print();			
Student* s4 = new Student("Mihai Ionescu", "Victoriei, No 4", 20); s4->print();			
Student s5("Ion Ion", 18); s5.print();			
Student s6("Ion Ione1"); s6.print();			

How many times is the destructor called at the end of the above program?

If the class is updated to:

```

class Student{
private:
    char* name;
    char address[50];
    unsigned int age;
public:
    Student(){
        this->name = new char[strlen("Missing")+1];
        strcpy(this->name, "Missing");
        strcpy(this->address, "Missing");
        this->age=22;
    }
    Student(unsigned int v_age, char* v_name, char* v_address){
        this->age=v_age;
        this->name = new char[strlen(v_name)+1];
    }
};

```

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```

        strcpy(this->name, v_name);
        strcpy(this->address, v_address);
    }

    Student(char* v_name, char* v_address, unsigned int v_age=22):age(v_age){
        this->name = new char[strlen(v_name)+1];
        strcpy(this->name, v_name);
        strcpy(this->address, v_address);
        this->age=v_age;
    }

    void print(){
        cout<<"Name: "<<this->name<<endl;
        cout<<"Adress: "<<this->address<<endl;
        cout<<"Age: "<<this->age<<endl;
    }
    ~Student(){
        if(this->name!=NULL){
            delete[] this->name;
        }
    }
};

```

Analyze the next lines:

	Expected value/error	Actual result/error	Reason for having an error
Student s1(21, "Ion Popescu", "Romana, No 7"); s1.print();			
Student* s2 = new Student(20, "Mihai Ionescu", "Victoriei, No 4"); s2->print(); delete s2;			
Student s3("Ion Ion", "Mihail Moxa, 11"); s3.print();			
Student* s4 = new Student("Blank", "Missing", 19); s4->print(); delete s4;			

How many times is the destructor called at the end of the above program?