



MIDTERM EXAMINATION

CS304- Object Oriented Programming

Question No: 1 (Marks: 1) - Please choose one

Which part of an object exhibits its state?

▶ Data

▶ **Operations**

▶ Any public part

▶ Any private part

Question No: 2 (Marks: 1) - Please choose one

Inheritance is a way to

▶ organize data.

▶ pass arguments to objects of classes.

▶ **add features to existing classes without rewriting them.**

▶ improve data-hiding and encapsulation.

Question No: 3 (Marks: 1) - Please choose one

Suppose you have been given the following design,

"A person has a name, age, address and sex. You are designing a class to represent a type of person called a patient. This kind of person may be given a diagnosis, have a spouse and may be alive".

Given that the person class has already been created, what of the following would be appropriate to include when you design the patient class?

▶ **registration date and diagnosis**

- ▶ age and sex
- ▶ sex and diagnosis
- ▶ diagnosis and age

Question No: 4 (Marks: 1) - Please choose one

What problem(s) may occur when we copy objects without using deep copy constructor?

▶ **Dangling pointer**

- ▶ Memory Leakage
- ▶ All of the given
- ▶ System crash

Question No: 5 (Marks: 1) - Please choose one

this pointers are not accessible for static member functions.

▶ True

▶ **False**

Question No: 6 (Marks: 1) - Please choose one

A static member function cannot be declared.

- ▶ Static
- ▶ Implicit
- ▶ Explicit
- ▶ **Virtual**

Question No: 7 (Marks: 1) - Please choose one

_____ remain in memory even when all objects of a class have been destroyed.

▶ **Static variables**

- ▶ Instance variable
- ▶ Primitive variables
- ▶ None of given

Question No: 8 (Marks: 1) - Please choose one

Friend functions are _____ functions of a class.

- ▶ None of given
- ▶ object member
- ▶ **non-member**
- ▶ data member

Question No: 9 (Marks: 1) - Please choose one

_____, which means if A declares B as its friend it does NOT mean that A can access private data of B. It only means that B can access all data of A.

▶ **Friendship is one way only**

- ▶ Friendship is two way only
- ▶ NO Friendship between classes
- ▶ Any kind of friendship

Question No: 10 (Marks: 1) - Please choose one

The statement `objA=objB;` will cause a compiler error if the objects are of different classes.

- ▶ **True**
- ▶ False

Question No: 11 (Marks: 1) - Please choose one

Identify which of the following overloaded operator function's declaration is appropriate for the given call?

Rational_number_1 + 2.325

Where Rational_number_1 is an object of user defined class Rational_number.

- ▶ Rational_number operator+(Rational_number & obj);
- ▶ Rational_number operator+(double& obj);
- ▶ Rational_number operator+(Rational_number &obj, double& num);
- ▶ operator+(double& obj);

Question No: 12 (Marks: 1) - Please choose one

Which operator can not be overloaded?

- ▶ The relation operator (>=)
- ▶ Assignment operator (=)
- ▶ **Script operator ([])**
- ▶ Conditional operator (? :)

Question No: 13 (Marks: 1) - Please choose one

To convert from a user-defined class to a basic type, you would most likely use

- ▶ a built-in conversion operator.
- ▶ a one-argument constructor.
- ▶ an overloaded = operator.
- ▶ a conversion operator that's a member of the class.

Question No: 14 (Marks: 1) - Please choose one

The technique in which we visualize our programming problems according to real life's problems is called

- ▶ structured programming

- ▶ **object oriented Programming**
- ▶ procedural programming
- ▶ non of the given

Question No: 15 (Marks: 1) - Please choose one

In object orientated programming, a class of objects cans _____
properties from another class of objects

- ▶ Utilize
- ▶ Borrow
- ▶ **Inherit**
- ▶ Adopt

Question No: 16 (Marks: 1) - Please choose one

A C++ class is similar to -----

- ▶ **Structure**
- ▶ Header File
- ▶ Library File
- ▶ None of the given

Question No: 17 (Marks: 2)

Can we create an array of objects for a class having user defined constructor? Justify your answer.

Question No: 18 (Marks: 2)

Friend functions increase 'Programming bugs'. What is your opinion?

Question No: 19 (Marks: 2)

Explain two benefits of **setter functions**.

Question No: 20 (Marks: 3)

What are binary operators? Give an example of binary operators overloading using any class.

Question No: 21 (Marks: 3)

Give c++ code to overload assignment operator for string class.

Question No: 22 (Marks: 5)

Writ c++ code to overload **subscript[]** operator for **String class**.

Solution:

```
#include <iostream>
#include <sstream>
#include <string>

using namespace std;

class BoundsException {
public:
    BoundsException(int x) : _index(x) { }
    void what() {
        cout << "index out of range : " << _index << endl;
    }
private:
    BoundsException() { }
    int _index;
};

class BCheckString : public string {
public:
    BCheckString(const string s) : string(s) { }
    BCheckString() : string() { }
    char operator[](int k) {
        char c = ' ';
        int N = static_cast<int>(this->size());

        if ((k < 0) || (k >= N)) {
            throw BoundsException(k);
        } else {
            c = (this->c_str())[k];
        }
        return c;
    }
};

int main(int argc, char *argv[]) {
    BCheckString s1;
    string line;
    stringstream *ss;
    int x;
    char c;

    while (true) {
        cout << "Enter string : ";
        getline(cin,s1);
        if (s1.size() > 0) {
            cout << "Enter char index : ";
            getline(cin,line);
            ss = new stringstream(line);
            if (((*ss) >> x) && (!ss->good())) {
                try {
                    c = s1[x];
                    cout << c << endl;
                }
            }
        }
    }
}
```

```
        } catch (BoundsException &ex) {
            ex.what();
        } catch (...) {
            cout << "unknown exception" << endl;
        }
    }
    delete ss;
}
}
return 0;
}
```

#if 0

Sample run:

```
Enter string : xyz
Enter char index : 0
x
Enter string : 123
Enter char index : 2
3
Enter string : abc
Enter char index : -1
index out of range : -1
Enter string : def
Enter char index : 3
index out of range : 3
Enter string :
```

#endif

Question No: 23 (Marks: 5)

Detect and correct compile time error(s) in the following code.

```
class Exam
{
    char *ExamName;
    int No_of_paper;

public:
    Exam()
    {
        ExamName = "Final Term";
        No_of_paper = 5;
    }

    void setname( char* name) const
    {
        ExamName = name;
    }

    void setpaper(int paper) const
    {
```

```
No_of_paper = paper;
}
char* getname()
{
    return ExamName;
}
int getpaper()
{
    return No_of_paper;
}
};

int main()
{
    const Exam exam1;

    cout << " Exam          = "<<exam1.getname()<<endl;
    cout << " Numbe of paper = " << exam1.getpaper();

    getch();
    return 0;
}
```