CSC 313 AssignmentsThe answer to some complex ones are already filled in. All groups should meet to practice these questions in preparation for examination (@2023)

1. Explain the Object Oriented Paradigm (OOP) and its properties in a maximum of two sentences.

2. What are the core differences between Object-Oriented Paradigm and Procedural Programming?

3. Describe two (2) defects of the Procedural Approach.

4. Mention the four (4) main features of OOP

5. Describe the following: Object, Class, Single Inheritance, Multiple Inheritance, Reusability

6. What are the major differences between Classes and Objects?

7. What is the difference between a class and a structure?

8. Given: `string my_string;`

   Explain in one sentence the main difference between the following two statements:
   ```
   cin << my_string;
   getline(cin, my_string);
   ```

   Answer:
   `Cin` will get a word and `getline()` can get a line of multiple words. (Practice this in NETBEANS environment within your individual groups.

9. Given the following program:

```
1. #include <iostream>
2. using namespace std;
3. class Book {
4. public:
5. Book(){}
6. Book(string s):name(s){}
7. void display(){ cout << name; }
8. private:
9. string name;
10. }
11.
12. int main(){
13.
14. return 0;
17. }
```

When compiled in Netbeans, part of the error message is:

```
newClass1.cpp:10:3: error: expected ';' after class definition
BUILD FAILED (exit value 2, total time: 2s)
```

Explain what causes the error and how to fix the error.

Note:
There may be other errors in the program. Do not provide those errors as answers as they will not produce the same error message shown.

10. Consider the following C++ program.

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

/*Base Class*/
class Country
{
public:
void Nigeria(void);
};
// function definiion
void Country::Nigeria(void)
{
cout << "I'm a country called Nigeria()..." << endl;
}
/*Derived Class*/
class State:public Country
{
public:
void Ekiti(void);
};
// function definition
void State::Ekiti(void)
{
cout << "I'm a State called Ekiti()..." << endl;
}
int main()
{
//create object of derived class - class B
State objState;
// Now, we can access the function of class A (Base class)
objState.Nigeria();
objState.Ekiti();
return 0;
}
```

i) What is the C++ OOP property demonstrated in this program?

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Answer: Inheritance

ii) What is the output of the program?

Answer: I am a State called Ekiti in a Country called Nigeria.

11. What is the output of the following program?

```cpp
#include <iostream>
using namespace std;
class Box
{
public :
double length;
double breadth;
double height;
};
int main( )
{
Box Box1;
double volume;
Box1.height = 5;
Box1.length = 6;
Box1.breadth = 7.1;
volume = Box1.height * Box1.length * Box1.breadth;
cout << "Volume of Box1 : " << volume <<endl;
return 0;
}
```

12. Which special character is used to mark the end of class?

13. What keyword is used to define the user defined data types? Give an example.

14. What is the syntax of user-defined data types?

15. What is the output of this program?

```cpp
include <iostream>
using namespace std;
int main()
5
{
typedef int num;
num a = 10, b = 15;
num c = a + b + a - b;
cout << c;
return 0;
```

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```
}
```

Clue: In this program, we are manipulating the numbers and printing the result using user-defined data types.

16. How many times will the following loop run?

```
Int i = 0;
While (i<5)
{
cout<<i<<endl;
i++;
}
```

17. What type of error can you identify in the following code snippet?

```
#include <iostream>
int main
{
int a = 10;
int b = 20;
int c = a+b;
return 0;
}
```

18. Is there any error in the following code snippet intended to calculate the average score of a student in three subjects? If yes, what kind of error is it? Identify what part of the program holds the error?

```
#include <iostream>
int main ()
{
int Subject1 = 75;
int Subject2 = 65;
int Subject3 = 70;
int average = Subject1 + Subject2 + Subject3/3;
std::cout<<"The Average is" <<average;
return 0;
}
```

19. Mention five (5) areas of (possible) deployment of OOP.

Answer:
- Real-time system
- Simulation and modeling
- Object-oriented data bases
- Hypertext, Hypermedia, and expertext
- AI and expert systems
- Neural networks and parallel programming
- Decision support and office automation systems

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- CIM/CAM/CAD systems

20. Create three arbitrary classes and a corresponding list of plausible objects to occupy that class.
21. Write a C++ program to create a class and corresponding objects. Use one of the example classes you created in (c) for this illustration.