JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- December 2017

B.Tech VII Semester

COURSE CODE: 12B1WCI734   MAX. MARKS: 35

COURSE NAME: C# and VB.Net

COURSE CREDITS: 03   MAX. TIME: 2Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1) (a) What is the importance of operator overloading?   **[3 Marks]**
   (b) Write a Program to check whether a complex number is greater than or equal to another complex number by overloading the $>=$ operator.   **[4 Marks]**

2) (a) Explain the problems with extending two interfaces?   **[3 Marks]**
   (b) Create two interfaces called employee and student having the following methods:

   Student: Employee:
   getdata();   getdata();
   putdata();   putdata();

   Now create a class called empstudent. The class depicts a PhD scholar who is also teaching in the university. He is doing his PhD from the university; therefore he is a student. Moreover he is teaching in the university, say as guest faculty; therefore, he is also an employee of the university. The class should implement the interfaces. Write a program for this problem.   **[4 Marks]**

3) (a) How many catch statements can you have in your program? What happens if none of your catch handles the thrown exception?   **[3 Marks]**
   (b) Design a program to gather the details of a student. The program should enquire the first name, last name, and the middle name to start with. If the length of any of the three strings is less than two, then exception should be thrown. **[4 Marks]**

4) Create a class WebServer. Create two methods downloadfile() and downloadimage() in the class. Now, in the main class create two threads T1 and T2. Associate T1 with downloadfile() and T2 with downloadImage(). Now run the threads and also depict the use of the sleep method.
   Now, set a highest priority for T1 and a lowest priority for T2. Discuss, the output for both the cases i.e., before and after setting the priority.   **[7 Marks]**

5) Consider a situation where we have a file shared between many people.

- If one of the people tries editing the file, no other person should be reading or writing at the same time, otherwise changes will not be visible to him/her.
- However if some person is reading the file, then others may read it at the same time.

Precisely in OS we call this situation as the **readers-writers problem.**

Problem parameters:

- One set of data is shared among a number of processes
- Once a writer is ready, it performs its write. Only one writer may write at a time
- If a process is writing, no other process can read it
- If at least one reader is reading, no other process can write
- Readers may not write and only read

Write a program in C# using threads to implement the reader's writer's problem.

[7 Marks]