



Course Code: CS 423	Course Name: Information Processing Techniques
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Instructions:

- Return the question paper.
- Read each question completely before answering it. There are 4 questions and 3 pages.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- All the answers must be solved according to the sequence given in the question paper.
- This paper is subjective

Time: 60 minutes.

Max Marks: 40 points

Question 1: Multiple Choice Questions

(10 Marks)

1. Which of these is used as a default specifier for a member of the class if no access specifier is used for it?

- a) private
- b) public
- c) public, within its own class
- d) protected

2. Choose the correct statement(s) about the WriteLine()?

- a) Can display one or more value to the screen
- b) Adds a newline character at the end of each new output
- c) Allows to output data in as many different formats
- d) None of the mentioned

3. Select the statements which define the stream.

- a) A stream is an abstraction that produces or consumes information
- b) A stream is linked to a physical device by the I/O system
- c) C# programs perform I/O through streams
- d) All of the mentioned

4. If s1 and s2 are references to two strings, then which of the following is the correct way to compare the two references?

- a) s1 is s2
- b) s1 == s2
- c) s1 === s2
- d) s1.Equals(s2)
- e) strcmp(s1, s2)

5. Which of the following statements is correct about a namespace in C#.NET?

- a) Namespaces help us to control the visibility of the elements present in it.
- b) A namespace can contain a class but not another namespace.
- c) If not mentioned, then the name 'root' gets assigned to the namespace.
- d) It is necessary to use the using statement to be able to use an element of a namespace.
- e) We need to organize the classes declared in Framework Class Library into different namespaces.

internal
put-pro → Pass. base
pro-int → base, Assembly

6. What is boxing?
a) Encapsulating an object in a value type.
b) Encapsulating a copy of an object in a value type.
c) Encapsulating a value type in an object.
d) Encapsulating a copy of a value type in an object.

7. XML uses the features of
a) HTML
b) XHTML
c) VML
d) SGML

8. Which of the following statements are correct about exception handling in C#.NET?

- I. try blocks cannot be nested.
II. In one function, there can be only one try block.
III. An exception must be caught in the same function in which it is thrown.
IV. All values set up in the exception object are available in the catch block.
V. While throwing a user-defined exception multiple values can be set in the exception object.
- a) I only
b) I and II only
c) III only
d) IV and V only
e) All of the above

9. Which of the following statements are correct?

- I. A struct can contain properties.
II. A struct can contain constructors.
III. A struct can contain protected data members.
IV. A struct cannot contain methods.
V. A struct cannot contain constants.
- a) I and II
b) III, and IV
c) I, II and IV
d) III and V

10. Which of the following statements are correct about an interface used in C#.NET?

- a) An interface can contain properties, methods and events.
b) The keyword must implement forces implementation of an interface.
c) Interfaces can be overloaded.
d) Interfaces can be implemented by a class or a struct.
e) Enhanced implementations of an interface can be developed without breaking existing code.

Question 2: State the following as True or False and in case of false, justify your answer.

(5 Marks)

1. To uninstall a windows service, following command can be executed:
uninstall /w <service.exe>. T
2. Currency is a primitive data type in C# .NET
3. The string built using the String class are immutable (unchangeable), whereas, the ones built- using the StringBuilder class are mutable.
4. System.Timers.Timer is thread-safe. T
5. IComparer interface provides a way to customize the sort order of a collection F
Compare strings

- Question 3: Answer the following questions
1. Explain the difference between assembly and module.
2. Write different types of exception handling in C# .NET.
3. What is MSIL?

- Question 4: Explain the following
1. What is a window class?

Question 3: Answer the following questions briefly.

1. Explain the difference between Layer and Tier Architecture?
 2. Write different scenarios in which we may use Abstract Class or Interface?
 3. What is MSIL in Dot Net Framework and Why it is used?

(3 Marks each)

Question 4: Explain the following questions. You may use diagrams where necessary. (8 Marks each)

1. What is a Windows Service and how does its lifecycle differ from a "standard" EXE? How can we debug a windows service?
 2. You have been tasked to write a Windows Service snippet which will identify number of distinct words in the given set of files. Your service should perform the following tasks:
 - The service will recheck the folder every 3 minutes.
 - When the Service is started, it reads all of the text files present in "C:\IPT\Inputs"
 - When the Service is stopped, it creates a file which will contain distinct words with their count in the directory "C:\IPT\Output"

Note: You already have the following customized methods that you will use in your code:

- string ReadFromFile(string Directory); // Returns a string array of individual files when directory is provided
- bool WriteToFile(string FilePath,<datatype> bagOfWords); // Writes to a file when complete file path is provided. You must use a proper datatype for the variable bagOfWords.

- Example Input:

File 1 "Input1.txt": Welcome to the world of Windows Services

File 2 "Input2.txt": There are a lot of Services over the World Wide Web

- Example Output:

Output File:

Welcome	1
to	1
the	2
world	2
of	2
Windows	1
Services	2
There	1
are	1
a	1
lot	1
over	1
Wide	1
Web	1

$$\begin{array}{rcl} \cancel{5000} & = 5 \text{ sec} \\ 30,000 & = 30 \text{ sec} \\ 180,000 & \end{array}$$

$$\begin{array}{rcl} 3 \times 60 \\ = 180 \text{ sec} \end{array}$$

BEST OF LUCK!

$$\begin{array}{rcl} 3 \times 3 & = 9 \\ 9 \times 2 & = 18 \\ & = 27 \end{array}$$

$$\begin{array}{rcl} 15 \\ 15 \\ 15 \\ \hline 45 \end{array}$$

8. Which of the following statements are correct?
- try blocks cannot be nested.
 - In one function, there can be only one try block.
 - An exception must be caught in the same function in which it is thrown.
 - Set up in the exception object are available in the catch block.
 - User-defined exception multiple values can be set in the exception object.

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$$\begin{aligned}3 \text{ min} &= 3 \times 60 \times 1000 \\&= 3 \times 60000 \\&= 180000 \text{ milli seconds}\end{aligned}$$

on Start(Status [] args) {
 Dictionary<string, int> w = new Dictionary<string, int>();

string s = ReadFromFile("C:/IPT/Inputs");
 calculate(s);

Timer += new Timer(180000); *interval time*

+> callBack Function (DoTask);

{

public static void DoTask(sender s, Event e) {
 string[] s = ReadFromFile("C:/IPT/Inputs");
 calculate(s);

{

public static void calculate(string[] s) {
 for (int i=0; i < s.size(); i++) { string s2 = spwt(s[i], " ");
 for each (string str in s2) {

if (w.contains(str)) {

int val = w.getValue(str);

val++;

w.add(str, val);

else {

w.add(str, 1);

}

{

{

Side.

(5 Marks)

Lines built- using

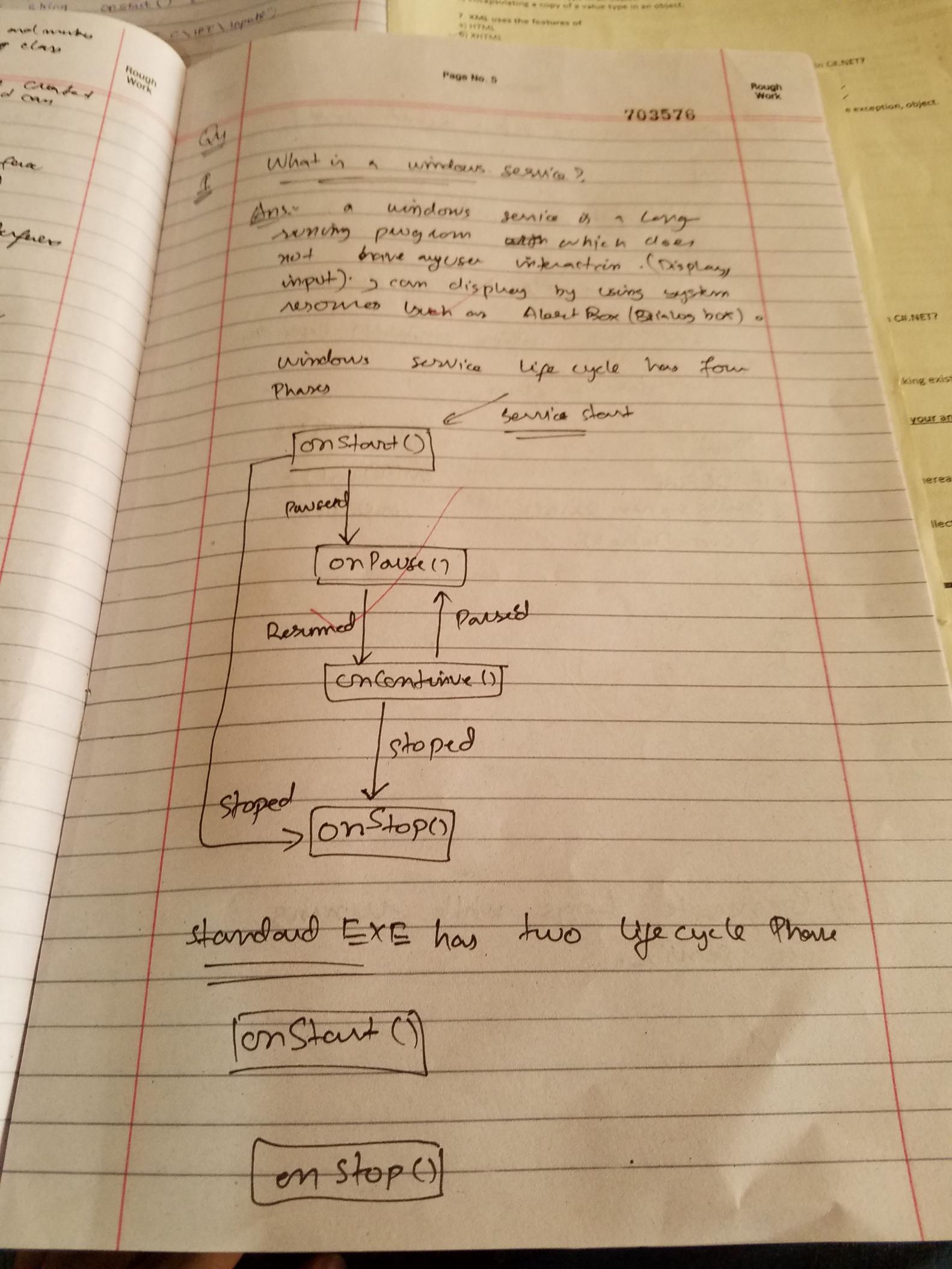
BRANCH

onStop(1) S

writeToFile("C:\IPT\output\file", "w");

g

⑥



~~Topic~~
How can we debug a window service?

Ans

- ① Learn from internet

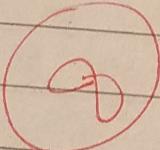
Using #if DEBUG directive
and then calling constant() explicitly
in service class

```

Moving
# if DEBUG
Service s = new Service()
s.onDebug();
#endif
    
```

class Service {
 onDebug(){}
 onStart(){}
}

2



3

- ② Generate Logs while writing a service.

(Q4)
2

Interface is just declaration of functions and members
not definition. One implementing class
will define them.

Q3

2:-

Abstract: whose instance can not be created
but can define functions and can
be derived by other classes.

Rough Work

① one scenario to use a interface
is when C# do not support
multiple inheritance so we can
~~implement~~ implement multiple interfaces

② interface can be used to provide
adaptability b/w two components.

③ one example of abstract class is

shape class now shape is
not a object ^{itself} but other objects
can be derived from it

like Square : shape
Circle : shape

now shape can define a function
which will be inherited to
Square and Circle.

(4)

6. What is boxing?
- Encapsulating an object in a value type
 - Encapsulating a copy of an object in a value type
 - Encapsulating a value type in an object
 - Encapsulating a copy of a value type in an object
7. ANL uses the features of
- HTML
 - XHTML
 - VML
 - SGML

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Rough Work

Q2

① False ✓

To uninstall a service
we write ~~installutil /u service.exe~~

(5)

②

True ✓

) True ✓

False ✓

[System.Threading.Timer. Timer is]
Thread-safe

True ✓

Page No. 4

DIRCOT

```

    * Public class Service {
        public string Constant() {
            Directory = "C:\PPT\Inputs";
            while (true) {
                Delay(180,000);
            }
        }
    }
  
```

3sec - 180 sec
Delay(180,000) = 3sec
Campaign

Page No. 3

Q2
22-

Layer is a conceptual division
and Tier is a physical division

As in Layered architectures
we divided a system into
3 layers Presentation, Application
and Data but these are divided
conceptually and can run
on single machine

Two architectures

2-tier client - server

3-tier client - agent - server

They are separated physically

(3)