

# CS411-Visual Programming MID TERM SUBJECTIVE

Prepared by: JUNAID  
MALIK

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[COMPANY NAME]

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## 1: What are delegates?

A delegate is a reference to a method. It is like function pointers in some other languages. Delegates are used **to define callback methods and implement event handling**, and they are declared using the “delegate” keyword.

**Allow you to develop libraries and classes that are easily extensible**, through delegation, a **manager is able to divide the work and allocate it to the subordinates**. This helps in reducing his work load so that he can work on important areas such as - planning, business analysis etc.

## 2: Types of constructor:

**In C#, constructors can be divided into 5 types**

- Default Constructor.
- Parameterized Constructor.
- Copy Constructor.
- Static Constructor.
- Private Constructor.

## 3: Explain delegates declare and call delegate:

### delegates declare

A delegate is a type that represents references to methods with a particular parameter list and return type. When you instantiate a delegate, you can associate its instance with any method with a compatible signature and return type. You can invoke (or call) the method through the delegate instance.

**// this is the delegate declaration**

```
public delegate int Comparer(object obj1, object obj2);
```

### call delegate:

Delegates can be invoke like a normal function or Invoke() method. Multiple methods can be assigned to the delegate using "+" or "+=" **operator** and removed using "-" or "-=" operator. It is called multicast delegate. If a multicast delegate returns a value then it returns the value from the last assigned target method.

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An event-driven architecture uses **events to trigger and communicate between decoupled services** and is common in modern applications built with microservices. An event is a change in state, or an update, like an item being placed in a shopping cart on an e-commerce website.

## **5: Attached property in WPF:**

An attached property is a Extensible Application Markup Language (XAML) concept. Attached properties enable **extra property/value pairs to be set on any XAML element**, even though the element doesn't define those extra properties in its object model. The extra properties are globally accessible.

## **6: Keyboard event:**

KeyboardEvent objects describe **a user interaction with the keyboard**; each event describes a single interaction between the user and a key (or combination of a key with modifier keys) on the keyboard.

keyboard events include, keyup, and preview versions of them.

KeyEventArgs contains Key, ImeProcessedKey, DeadCharProcessedKey, SystemKey, IsUp, IsDown, IsToggled, KeyStates, IsRepeat, and KeyboardDevice. System.Windows.Input.Keyboard and its PrimaryDevice property are accessible everywhere.

## **7 :What is the return type of destructor?**

Destructors do not have any return type not even void.

## **8: Why you use “iostream”, write the syntax:**

**iostream provides basic input and output services for C++ programs.**

iostream uses the objects cin , cout , cerr , and clog for sending data to and from the standard streams input, output, error (unbuffered), and log (buffered) respectively.

```
#include<iostream.h>
```

## **9: What is debugging and its two ways:**

Debugging is **the process of finding errors during application execution.**

It does not mean syntax errors, with which the application cannot be compiled, but on logic errors. Logic errors can only be noticed during

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application execution.

Ways of debugging:

- ❖ Evaluate an expression with or without side effect
- ❖ Enable and Disable Just My Code
  
- ❖ Edit and Continue in XAML
  
- ❖ Use OzCode

## **10: What is bytecode in Java?**

Java bytecode is the instruction set for the Java Virtual Machine. It acts similar to an assembler which is an alias representation of a C++ code. As soon as a java program is compiled, java bytecode is generated. In more apt terms, java bytecode is the machine code in the form of a . class file.

## **11: Why most WPF classes are inherently thread-unsafe?**

Answer: Most WPF classes derive from dispatcher object and are therefore inherently thread-unsafe. The Dispatcher part of the name refers to wpfs version of a Win32-like

message loop,

## **12: Name the properties supported by the Scale Transform also write its default values of each of Them?**

Answer:

Scale Transform:

Scale Transform enlarges or shrinks an element horizontally, vertically, or in both directions. This transform has four straightforward double properties:

- . ScaleX—Multiplier for the element's width (default value = 1)
- . ScaleY—Multiplier for the element's height (default value = 1)
- . CenterX—Origin for horizontal scaling (default value = 0)

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. CenterY—Origin for vertical scaling (default value = 0)

```
<Button.RenderTransform>
```

```
<ScaleTransform ScaleX="2" ScaleY="2"/>
```

```
</Button.RenderTransform>
```

**13: Consider the following code snippet and write the output:**

```
XmlDocument xmlDoc = new XmlDocument();  
xmlDoc.LoadXml("<uni name='Virtual'> university Node</uni.>");  
console.WriteLine(xmlDoc.DocumentElement.Name);  
console.WriteLine(xmlDoc.DocumentElement.InnerText);  
console.ReadLine();
```

ANS: Element Name: Virtual Inner Text: University Node

**14: What we achieve from ZIndex codes?**

ZIndex is an integer with a default value of 0 that you can set to any number (positive or negative). Elements with larger ZIndex values are rendered on top of elements with smaller ZIndex values, so the element with the smallest value is in the back, and the element with the largest value is in the front.

**15: Difference b/w Margin and padding???**

**Answer:**

**Margin and Padding**

Margin and Padding are two very similar properties that are also related to an element's size. All Framework Elements have a Margin property, and all Controls (plus Border) have a Padding property. Their only difference is that Margin controls how much extra space gets placed around the outside edges of the element, whereas Padding controls how much extra space gets placed around the inside edges of the element. Both Margin and Padding are of type System.Windows.Thickness, an interesting class that can represent one, two, or four double values. The meaning of these values is demonstrated in Listing 4.1, which applies various Padding and Margin settings to Label controls.

The second set of Labels is wrapped in Borders because the margin settings would not be noticeable otherwise. Although not shown in this figure, Margin

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permits negative values. Padding does not.

## 16: Which Option to be Used to Fill the Dock Panels?

Answer:

Dock panel allows easy docking of elements to an entire side.

Dock attached property has left, right, top, bottom values.

Last child fills space unless `lastchildfill=false`.in

We can also do this by setting `Background = —Red!`

17: How many children an object can have, name them?

ANS: An object element can have three types of children

1. A value for a content property,
2. Collection items
3. A Value that can be type-converted to the object element.

17: which functionality is actually a super set of stack panel functionality.

ANS: **Stack Panel** is popular, simple, useful, stacks sequentially. It is one of the few panels that don't even define an attached property. Orientation can be horizontal or vertical (which is default). Default horizontal direction is based on flow direction

18: What is Default of “Max height ““Min Height ““Max width” and “Min Width” ?

Max height = 1 because The height of an element does not include padding, borders, or margins

Min Height = 0

Max width= **Positive Infinity**.

Min Width = AUTO

19: Write the C# code line to take any string as input from user and the write that string to a file named “Student.txt”?

Answer:

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using System;

```
class Program
```

```
{
```

```
static void Main()
```

```
{
```

```
while (true) // Loop  
indefinitely
```

```
{
```

```
Console.WriteLine("Ente  
r input."); // Prompt
```

```
string line =  
Console.ReadLine();
```

```
// Get string from user
```

```
if (line == "exit") //  
Check string
```

```
{
```

```
break;
```

```
}
```

```
// Write the string to a  
file.
```

```
{
```

```
System.IO.StreamWriter  
file = new
```

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```
System.IO.StreamWriter(  
    "c:\\student.txt");  
  
file.WriteLine(lines);  
  
}  
  
file.Close();
```

**20: Which panel functionality is actually a superset of “stack panel” functionality?**

Answer:

Dock panel is a superset of stack panel, Dock attached property has left, right, top, bottom Values.

**21: For what purpose XAML is used in WF and WCF?**

Answer:

XAML is primarily used to describe interfaces in WPF and Silverlight. It is also used to express activities and configurations in workflow foundation (WF) and windows communication foundation (WCF). It's a common language for programmers and other experts e.g. UI design experts. Field specific development tools can be made. Field experts are graphic designers. They can use a design tool such as expression blend. Other than coordinating with designers, XAML is good for a concise way to represent UI or hierarchies of objects, encourages separation of front-end and back-end, tool support with copy and paste, used by all WPF tools.

**22: WPF Panels Are Derived from Which Class?**

Answer:

Panels are parents supporting layout of multiple children. They derive from the abstract

System.Windows.Controls.Panel class.

**23: How matrix transform is work like translate transform and give example?**

Answer:

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Translate Transform has X — Amount to move horizontally (default value = 0), Y.Amount to move vertically (default value = 0). It has no effect as a layout transform. Matrix Transform has a single Matrix property (of type System.Windows.Media.Matrix). representing a 3x3 affine transformation matrix.

## 19 Write xml code of given C# code?

```
StakPanelstackpanel = new StakePanel
```

```
Button button = new  
system.window.control Button;  
button.widh = 50;
```

```
button.Hight = 70  
button.HOrizontelAlligenemtn  
=right;  
stakepanel.child.add(button);
```

Answer:

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
<root>
```

```
<0>
```

```
<StakPanelstackpanel = new StakePanel>
```

```
Button button = new system.window.control Button;
```

```
</StakPanelstackpanel = new StakePanel>
```

```
</0>
```

```
<1>
```

```
<StakPanelstackpanel = new StakePanel>
```

```
button.widh = 50;</StakPanelstackpanel = new StakePanel>
```

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</1>

<2>

```
<StackPanelstackpanel = new StakePanel>
```

```
button.Hight = 70
```

```
</StakPanelstackpanel = new StakePanel>
```

</2>

<3>

```
<StackPanelstackpanel = new StakePanel>
```

```
button.HOrizontelAlligenemtn = right;
```

```
</StakPanelstackpanel = new StakePanel>
```

</3>

<4>

```
<StackPanelstackpanel = new StakePanel>
```

```
stakepanel.child.add(button);
```

```
</StakPanelstackpanel = new StakePanel>
```

</4>

**20: Name the Properties Supported by Scale Transform, write their default values?**

Answer:

Scale Transform has

scalex, scaley = 1; by default.

centerx, centery = 0; by default.

**21: Write names of 3 children of an object?**

**Ans.** An object element can have three types of children:

- ❖ A value for a content property

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- ❖ Collection items
- ❖ A value that can be type-converted to the object element

## 22: When Context Overflow in Built-in Panel Arise, How to Fix That?

Answer:

Content overflow is when parents and children can't agree on the use of available space. Content overflow can be dealt with Clipping, Scrolling, Scaling, Wrapping and Trimming.

## 23: Logical Tree of the Code?

Answer:

Logical tree exists even if there is no XAML. Properties, events, resources are tied to logical

trees. Properties propagated down and events can be routed up or down the tree. It's a

simplification of what's actually going on when rendered. Visual tree can be thought of as an

extension of the logical tree though some things can be dropped as well. Visual tree exposes

visual implementation details e.g. A list box is a border, two scrollbars and more. Only things

from visual or visual3d appear in a visual tree. Avoid depending on visual tree in your code.

## 24: Syntax of CDATA Section?

Answer:

```
<x:Code>
```

```
<![CDATA[
```

```
Void button_Click(object sender, RoutedEventArgs e)
```

```
{
```

```
This.Close();
```

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}

]]>

## 25: Explain Routed Events?

Answer:

Routed events are like dependency properties on top of .net properties.

Similarly routed events are a layer on top of .net events.

They can travel up or down a visual or logical tree.

Helps apps remain oblivious to the visual tree. E.g. Button exposes Click based on

mouseleftbuttondown and key down but actually button chrome or text block visual child fires

it. Event travels up the tree and Button eventually sees it. Or like in a previous example

rectangle on top of button. So arbitrary complex content but Click still raised. Otherwise

would require custom code on inner content or consumers. Very similar to dependency

property concept.

## 26: WPF Read-Only?

Answer:

Read only properties

- ❖ Desiredsize
- ❖ Rendersize
- ❖ Actualheight
- ❖ Actualwidth.

They are useful to act programmatically on final size

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## 27: What We Achieve from ZIndex Codes?

### Answer:

ZIndex is an integer with a default value of 0 that you can set to any number (positive or negative). Elements with larger ZIndex values are rendered on top of elements with smaller ZIndex values, so the element with the smallest value is in the back, and the element with the largest value is in the front.

## 28: Why Most WPF Classes Are Inherently Thread-Unsafe?

### Answer:

Since WPF classes derive from dispatcher object therefore they are inherently thread-unsafe. Reason: Dispatcher object is the base class meant for any object that wishes to be accessed only on the thread that created it.

## 29: Which transforms all framework elements have?

### Answer:

- ❖ Layout Transform
- ❖ Render Transform

## 30: What will be the easiest way if someone wants to know whether a certain string is a number or not? Elaborate your answer with an example?

### Answer:

- ❖ IsNumeric (String s)
- ❖ This method is used to find if the string is numeric or not.

## 31: Write the XAML code to create a “DockPanel” having four buttons with dock settings i.e. Top, Bottom, Right and Left.

### Answer:

Dock panel allows easy docking of elements to an entire side. Dock attached property has left, right, top, bottom values. Last child fills space unless lastchildfill=false.

```
<dockpanel>
  <Button dockpanel.Dock="Top" Background="Red">1(Top)</Button>
  <Button dockpanel.Dock="Left" Background="Orange">2 (Left)</Button>
  <Button dockpanel.Dock="Right" Background="Yellow">3 (Right)</Button>
  <Button dockpanel.Dock="Bottom" Background="Lime">4 (Bottom)</Button>
  <Button Background="Aqua">5</Button>
</dockpanel >
```

## 32: Write two differences between WPF and DirectX?

### Answer:

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WPF is made for designers to create vector-based applications using XML and managed code. It uses DirectX as the rendering engine under the covers. DirectX is a set of APIs that abstracts access to modern graphics rendering hardware, as well as other technologies such as sound or input devices. WPF is not designed for any significant game programming, other than, say, a simple card game. DirectX is designed with the intention of allowing you to create a 3D user interface into your game.

**33: When two or more independent grids need to be synchronized, then how can we synchronize them?**

**Answer:**

we can synchronize two or more independent grids by using Sharedsizegroup

**34: What is the biggest feature of dependency property?**

**Answer:**

Its built-in-ability to provide change notification.

**35: What is the purpose of using XAML extensions?**

**Answer:**

XAML is the **language to build user interfaces for Windows and Mobile applications** that use Windows Presentation Foundation (WPF), UWP, and Xamarin Forms. The purpose of XAML is simple, to create user interfaces using a markup language that looks like XML.

**36: WPF combines the best attribute of some systems. write the names of three?**

**Answer:**

WPF aims to combine the best attributes of systems such as:

- DirectX (3D and hardware acceleration),
- Windows Forms (developer productivity),
- Adobe Flash (powerful animation support)
- HTML (declarative markup)

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**37: What is the purpose of WPF 2D transform classes?**

Answer:

To rotate, scale, move (translate), and skew FrameworkElement objects.

**39: For which class WPF are derived?**

Answer:

using System.Windows;

WPF is used to

**build Windows client applications that run on Windows operating system.**

**40: Why C# let us Develop devices resolution independent graphics?**

Answer:

C# enable us to develop device independent graphics so that same application/ GUI have same aspect ratio and appearance on all kind of displays. e.g. Windows phone, Windows PC etc

**41: Which term is used to refer to an object that derives from "UIElement" or "FrameworkElement"?**

Answer:

UIElement is the base class for all 2D visual objects.

System.Windows.UIElement. FrameworkElement is the base class that adds support for styles, data binding, resources etc.

System.Windows.FrameworkElement

**42: Name the three routed strategies?**

- ❖ **Tunneling:** The event is first raised on the root, then on each element down the tree until the source element is reached (or until event is marked as handled).
- ❖ **Bubbling:** The event is first raised on the source element, then on each element up the tree until the root is reached (or until the event is marked as handled).

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❖ **Direct:** The event is only raised on the source element. Only source element is given the chance to invoke handlers in response.

**43: Name the three parameters of Handlers for routed events?**

Answer:

Two are known - third is unknown.

## 1. Sender

Type: System.Object - The source of the event.

## 2. E

Type: System.EventArgs - An object that contains no event data.

**44: Why "Grid" panel is the best choice for most complex layout scenarios?**

Answer:

The grid is a layout panel that arranges its child controls in a tabular structure of rows and columns. Its functionality is similar to the HTML table but more flexible. A cell can contain multiple controls, they can span over multiple cells and even overlap themselves.

**45: Why C# let us Develop devices resolution independent graphics?**

Answer:

Fortunately for us, C# makes it very easy. The File class, from the System.IO namespace comes with pretty much everything we could possibly want, making it very easy to do simple

reading and writing of a file.

File.ReadAllText

File.WriteAllText

Also

AppendAllText

**46: What happens when an event is moved up?**

Answer:

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- ❖ **Bubbling:** The event is first raised on the source element, then on each element up the tree until the root is reached (or until the event is marked as handled).

**47: Why events are used in pairs? explain with example?**

Answer:

In VPL, a program is created by assembling pairs of one event and one or more action blocks. For example, a pair composed of a *button* event and a *motors* action tells the robot to move when a button is touched on the robot.

**48: Name the Built-in Transforms Their Default Values?**

**Name 5 built in 2D transform which are supported by "System.Windows.Media" namespace.**

Answer:

- ❖ Translate Transform
- ❖ Skew Transform - AngleX, AngleY, CenterX & CenterY (default value = 0)
- ❖ Scale Transform
- ❖ Rotate Transform – Angle, Centrex, Centery = 0;
- ❖ Matrix Transform

**49: Using Dock panel in WPF which attributes will be used if we don't want out center to be filled and what will be its value?**

Answer:

We can prevent and Turn off the Last Child element to fill the remaining Space the attributes Last Child fill and gives its property False

Syntax:

```
<Dockpanel lastchildfill="False">
```

**50: What are the type of Constructor in C#?**

Answer:

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A special method of the class that is automatically invoked when an instance of the class is created is called a constructor.

It Has 5 Types:

- ❖ Default Constructor.
- ❖ Parameterized Constructor.
- ❖ Copy Constructor.
- ❖ Static Constructor.
- ❖ Private Constructor.

IN:

**Details You Can Search by Yourself**

**51: What are main Benefits of Event Driven Architecture?**

**Answer:**

These are Following:

- ❖ Impure competitive advantage
- ❖ Create operational Efficacies
- ❖ More Robust Information
- ❖ Better Scalability and Fault Tolerance
- ❖ Increase Versatility
- ❖ Casting Functionality

**52: Name Any Three types of Mouse Event WPF Supports.**

**Answer:**

**These are Following.**

- ❖ MouseDown – it occurs when a mouse button is pressed.
- ❖ MouseEnter – it occurs when the mouse pointer enters the control.
- ❖ MouseHover – it occurs when the mouse pointer hovers over the control.
- ❖ MouseLeave – it occurs when the mouse pointer leaves the control.

**53: How x: Asynchronous and x: Synchronous attributes are XAML 2006?**

**Answer:**

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X: Asynchronous: It controls the Size of asynchronous XAML Loading Chunk.

x: Synchronous: 'x:SynchronousMode="Async"' on the root element of the xaml file.

54: Purpose of Event Driven.

Answer:

Event-driven architecture (EDA) is a software design pattern that enables an organization to detect “events” or important business moments

**55: Different Between Event consumer and Event Procedure.**

Answer:

EVENT CONSUMER: An event consumer is an entity at the edge of an event processing system that receives events from the system.

EVENT PRODUCER: An event producer is an entity at the edge of an event processing system that introduces events into the system.

**55: Different Between STATELESS EVENT and Derived EVENT:**

Answer:

RAW EVENT: A raw event is an event that is introduced into an event processing system by an event producer.

DERIVED EVENT: A derived event is an event that is generated as a result of event processing that takes place inside an event processing system.

**56: What is the meaning of word abstraction?**

Answer:

It is a process the Hide the Internal details and Show only the functionality

**57: How can we make a C# program when we can the same number of Columns in 2.3 column?**

Answer:

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using System;

```
public class Program
{
    public static void Main()
    {
        int[,] arr2d = new int[3,2]{
            {1, 2},
            {3, 4},
            {5, 6}
        };
        Console.WriteLine(arr2d[0, 0]);
        Console.WriteLine(arr2d[0, 1]);
        Console.WriteLine(arr2d[1, 0]);
        Console.WriteLine(arr2d[1, 1]);
        Console.WriteLine(arr2d[2, 0]);
        Console.WriteLine(arr2d[2, 1]);
    }
}
```

**58: Anonymous in C#? Declare and use in Anonymous in C#?**

**Answer:**

without any name that can contain public read-only properties only. It cannot contain other members, such as fields, methods, events, etc. You create an anonymous type using the new operator with an object initializer syntax.

**Code:**

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using System;

```
public class Program
{
    public static void Main()
    {
        var student = new { Id = 190202640, FirstName = "JUNAID ",
        LastName = "Malik" };

        Console.WriteLine(student.Id);
        Console.WriteLine(student.FirstName);
        Console.WriteLine(student.LastName);
    }
}
```

**59: write xaml code to create a button in a canvas with attributes left=0 right =0left =0 bottom =0**

**Answer:**

```
<Button Canvas.Right="0" Canvas.Bottom="0"
        Canvas.Right="0" Canvas.Top="0" Canvas.Bottom="0">Damo
```

**60: What is the different type of properties are available in c#?**

**Answer:**

There are the following 4 types of Properties:

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1. Read-Write Property
2. Read-Only Property
3. Static Property
4. Indexer Property

**61: Lets supposed we have create a button in c# now you need to set minimum width=75 and margin=10 in c# .**

Answer:

We have three Method these are following

- ❖ First Drag
- ❖ Then go to the Property an Increase or Decrease the Size of button
- ❖ Same as it in Programming Code

```
private void CreateButton()
{
    // Create a Button object
    Button Button = new Button();

    // Set Button properties
    Button.Height = 10;
    Button.Width = 75;
}
```

**62. Uses of delegates**

Answer:

Delegates are used to define callback methods and implement event handling, and they are declared using the “delegate” keyword. You can declare a delegate that can appear on its own or even nested inside a class.

**63. What is the return type of destructor in C#? Also In C++**

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Answer:

A Destructor **has no return type** and has exactly the same name as the class name (Including the same case).

**C++**

**Do not return a value (or void).** Cannot be declared as const, volatile, or static

**64. What is include iostream for C#? Also in C++**

Answer:

**iostream stands for standard input-output stream**

iostream is the header file which contains all the functions of program like cout, cin etc. and #include tells the preprocessor to include these header file in the program.

**65. What is a keyboard event?**

Answer:

Keyboard Event objects describe **a user interaction with the keyboard**

The event type ( keydown , keypress , or keyup ) identifies what kind of keyboard activity occurred.

**66. Write XML code Grid splitters 3 columns to apply in seconds?**

Answer:

```
<Grid>
```

```
<Grid.colmundefinitions >
```

```
<Columndefinition width = "auto"/>
```

```
<Colmundefinitions />
```

```
</Grid. columndefinition>
```

```
<Label Grid.column = "0" Backgrid =" red"
```

```
HorizontalContentAlignment = "Centre" verticalContentAlignment =  
"centre" >1
```

```
</Lable>
```

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```
<Gridsplitter Grid-column = "0" Width = "5"/>
```

```
<Lable Grid.culmn = "1" Background = "orange"
```

```
HorizontalContentAlignment = "Centre" verticalContentAlignment =  
"centre" >2
```

```
</Lable>
```

```
<Lable Grid.culmn = "2" Background = "yellow"
```

```
HorizontalContentAlignment = "Centre" verticalContentAlignment =  
"centre" >3
```

```
</Lable>
```

```
</Grid>
```

**67: Qno.1 How can I use the CopyTo method of the Windows Forms controls collection to copy controls into an array?**

**Answer:**

The CopyTo method will take the current controls collection and copy all the controls into an array. In order to use it, you must specify the array and the starting point. For instance, the following code copies the controls to the MyArrayOfControls array starting at the first element

**68: How Windows keep track of the files?**

**Answer:**

The system requires instance handles to keep track of all modules. The system assigns a handle to each copy of a running executable or .dll.

**69: Can you write a class without specifying namespace? Which namespace does it belong to by default?**

**Answer:**

Yes, you can, and then the class belongs to global namespace which has no name. For commercial products, naturally, you wouldn't want global

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namespace.

**70: "In the GDI environment there are two working spaces", Name these two.**

**Answer:**

In the GDI environment there are two working spaces

1. Logical
2. Physical

**71: how many kinds of macros are there?**

**Answer:**

There are two kinds of macros.

1. Object-like macros resemble data objects when used,
2. Function-like macros resemble function calls.

**72: What are the GDI environment working space names?**

**Answer:**

In the GDI environment there are two working spaces

1. Logical
2. Physical

**73: what are macros and its types? Explain it with example.**

**Answer:**

There are two kinds of macros.

1. Object-like macros resemble data objects when used,
2. Function-like macros resemble function calls.

**Example:**

Here's a macro that computes the maximum of two numeric values:

```
#define min(X, Y) ((X)>(Y) ? (X) : (Y))
```

**Explain**

To define a macro that takes arguments, you use the #define command with a list of parameters in parentheses after the name of the macro. The parameters may be any valid C identifiers separated by commas at the top level (that is, commas that aren't within parentheses) and, optionally, by

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white-spacecharacters. The left parenthesis must follow the macro name immediately, with no space in between

**74: what is a process?**

**Answer:**

A series of actions or steps taken to achieve an end, a process is a collection of interrelated work tasks initiated in response to an event that achieves a specific result for the customer of the process.

**75: Explain Pointer to Constant, and constant to Painter?**

**Answer:**

```
char * const ptr = buff. // constant pointer to variable data
```

```
*ptr = 'a';
```

```
ptr = buff2; // it will be an error
```

since we have declared ptr as a “constant pointer to variable data”, so we can change the contents of the place where ptr is pointing at, i.e. data but being a constant variable, the ptr value i.e. the address it contains cannot be modified.

variable pointer to Constant data:

```
const char * ptr = buff. //variable pointer to constant data
```

```
*ptr = 'a'; // it will be
```

```
an errorptr = buf2;
```

**76: Types of assertion and name them?**

**Answer:**

There are three types of assertion:

- 1 Preconditions**
  - Specify conditions at the start of a function.
- 2 Post conditions**
  - Specify conditions at the end of a function.
- 3 Invariants**

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- Specify conditions over a defined region of a program

## **77: Define Client area?**

### **Answer:**

The client area is the part of a window where the application displays output, such as text or graphics. For example, a desktop publishing application displays the current page of a document in the client area. The application must provide a function, called a window procedure, to process input to the window and display output in the client area.

## **78: WIN MAIN describe with detail**

### **Answer:**

WinMain is the starting point in Every Win32 GUI programs. WinMain has four Parameters these are,

1. First is instance of the current application.
2. Second parameter is also an instance of this application which is used for the previous application of the same type that is already running. It is used only in Window 16bit editions or Windows 3.1. Windows 32bit editions do not support this parameter. It is here just for compatibility.
3. Third parameter is a command line argument of string type which is a type defined as char \*.
4. Fourth parameter is windows style.

## **79: Message queues of each application (2)**

### **Answer:**

An application must remove and process messages posted to the message queues of its threads

## **80: Differentiate Desktop Window and Application Window**

### **Answer:**

<b><u>Desktop Windows</u></b>	<b><u>Application Windows</u></b>
When you start the system, it automatically creates the desktop window. The desktop window is a system-defined window	When you start an application, the system also associates a taskbar button with the application. The taskbar button contains the program icon and title

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uses a bitmap to paint the background of the screen	Most applications also create other windows, either directly or indirectly, to perform tasks related to the main window
A system configuration application, such as a Control Panel item, changes the desktop wallpaper by using the System Parameters Info function	An application window includes elements such as a title bar, a menu bar, the window menu (formerly known as the system menu),

**81: show the implementation of \_cdecl calling convention with respect to**

**Answer:**

- 1: Argument passing order.
- 2: stack maintenance responsibility.
- 3: name decoration convention.

**82: A window may have more than one windows inside it explain the line(2)**

**Answer:**

A Window may further contain more windows inside it. For example let's take a calculator; A calculator contains more windows in forms of buttons, radio buttons and check boxes.

- Every Window has its parent and zero or more siblings.
- Top level window has desktop as its parent.

**83: What is the function of was paint in Windows class**

**Answer:**

DispatchMessage function to a window procedure when the application obtains a WM\_PAINT message from message Queue by using the GetMessage or PeekMessage functions.

**84: Kernel tasks**

**Answer:**

Kernel is a main module of the operating system. This provides system services for managing threads, memory, and resources.

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Kernel has to perform very important responsibilities e.g.

1. Process Management
2. File Management
3. Memory Management (System and Virtual Memory)

## **85: Difference between `__stdcall` and `__cdecl` calling convention**

**Answer:**

`cdecl` and `__stdcall` just tells the compiler whether the called function or the calling function cleans up the stack. In `__stdcall` calling convention, the called function cleans up the stack when it is about to return. So if it is called in a bunch of different places, all of those calls do not need to extra code to clean up the stack after the function call. In `__cdecl` calling convention, it is the caller function that is responsible for cleaning the stack, so every function call must also need to include extra code to clean up the stack after the function call.

## **86: Erase window function explanation**

**Answer:**

Erase windows uses the `GetClipBox` function to retrieve the logical coordinates of the area to erase and passes these coordinates to the `FillRect` function. Applications that process these messages can use similar techniques. The system supplies a window device context with the `WM_ICONERASEBKGND` message regardless of whether the corresponding window has a private device context.

## **87: Clipboard Working**

**Answer:**

In Windows, data is shareable among applications. We can use it for copying the data from one file to the other in same format.e.g from notepad to MS Word.. All the text or image data you have previously copied can now be pasted in other application.

## **88: Infinite recursion**

**Answer:**

Infinite recursion, a special case of an infinite loop that is caused by recursion. This revised function will only run out of stack space if  $n$  is less than 1 or  $n$  is too large; error checking would remove the first case. For

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information on recursive functions which never run out of stack

**86: what is stack?**

**Answer:**

In computer science, a stack is an area of memory that holds all local variables and parameter used by any function, and remembers the order in which functions are called so that function returns occur correctly.

**87: what is extern storage class?**

**Answer:**

Extern defines a global variable that is visible to all object modules. When you use 'extern' the variable cannot be initialized as all it does is to point the variable name at a storage location that has been previously defined

**88: An application can set up for itself any logical coordinates system, using API. Write down any two.**

**Answer:**

There are two types of brushes: logical and physical. A logical brush is one that you define in code as the ideal combination of colors and/or pattern that an application should use to paint shapes. A physical brush is one that a device driver creates, which is based on your logical-brush definition.

**89: Differentiate between Super Classing and Sub Classing.**

**Answer:**

<b>SuperClassing</b>	<b>SubClassing</b>
Super-classing defines a class that adds new functionality to a predefined window class,	<i>Subclassing is allowed only within a process.</i>
Button or list box controls.	Win32 processes have separate address spaces
<i>Superclassing</i> involves creating a new class that uses the window procedure of an existing class for basic functionality.	<i>An application cannot subclass a window or class that belongs to another process.</i>

**90: why the entries in the parent process table and child table?**

**Answer:**

It means that the handle value that identifies a kernel object is identical in

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both the parent and the child processes

**91: Define instance Handle? Briefly explain**

**Answer:**

This member is Application instance handle.

**91: Write two macros that perform the same tasks as these functions perform?**

**Answer:**

A *macro* is a fragment of code which has been given a name. Whenever the name is used, it is replaced by the contents of the macro. There are two kinds of macros. They differ mostly in what they look like when they are used. *Object-like* macros resemble data objects when used, *function-like* macros resemble function calls.

You may define any valid identifier as a macro, even if it is a C keyword. The preprocessor does not know anything about keywords. This can be useful if you wish to hide a keyword such as `const` from an older compiler that does not understand it. However, the preprocessor operator `defined` can never be defined as a macro, and C++'s named operators cannot be macros when you are compiling C++.

To define a macro that takes arguments, you use the `#define` command with a list of parameters in parentheses after the name of the macro. The parameters may be any valid C identifiers separated by commas at the top level (that is, commas that aren't within parentheses) and, optionally, by white-space characters. The left parenthesis must follow the macro name immediately, with no space in between.

For example, here's a macro that computes the maximum of two numeric values:

```
#define min(X, Y) ((X)>(Y) ? (X):(Y))
```

**92: about \_cdecl calling convention?**

**Answer:**

The `_cdecl` is the default calling convention for C programs. In this calling convention, the stack is cleaned up by the caller. The `_cdecl` calling

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convention creates larger executables than\_stdcall, because it requires each function call to include stack cleanup code.

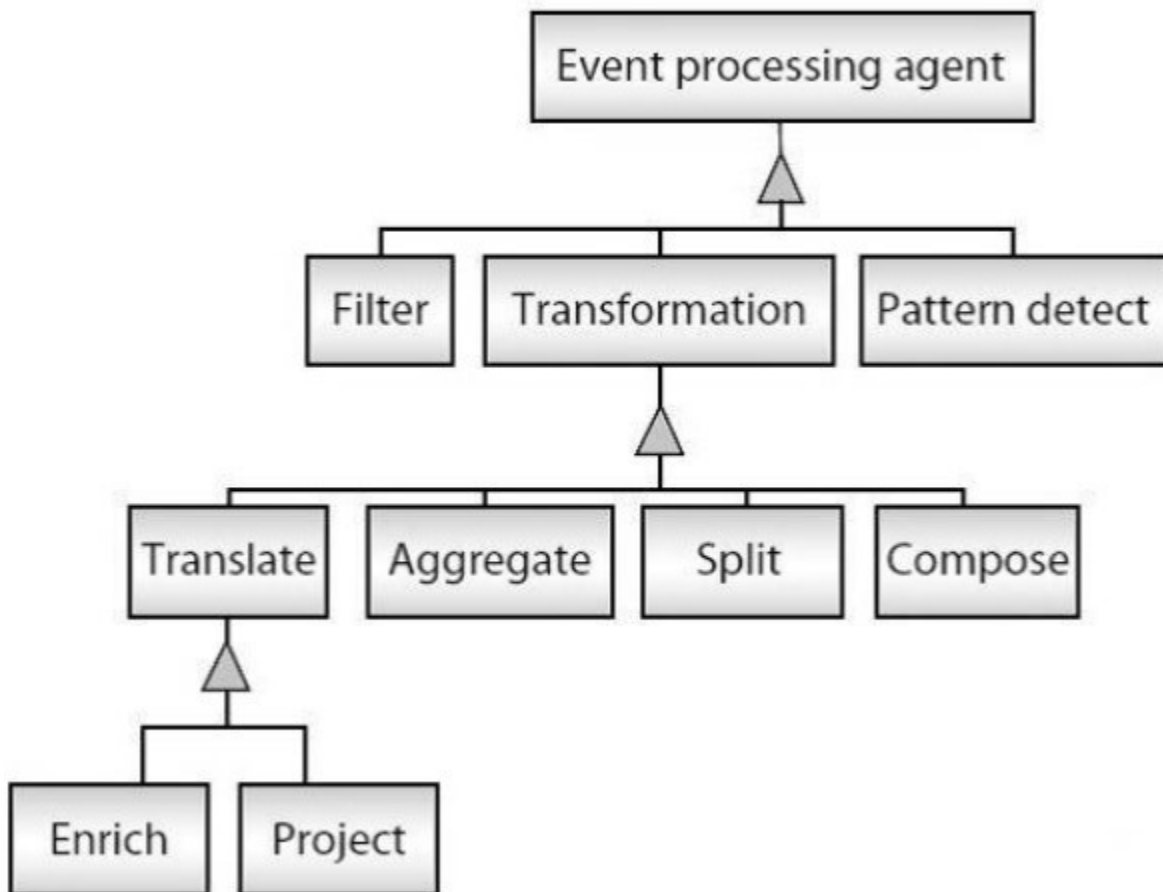
**93: Different Between homogeneous and heterogeneous event stream**

**Answer:**

A stream in which all the events must be of the same type is called a homogeneous event stream while a stream in which the events may be of different types is referred to as a heterogeneous event stream.

**94: Types of event agents.**

**Answer:**



**93: Feature of C#.**

**Answer:**

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- No global variables or functions.
- Locals cannot shadow global variables.
- There is a strict boolean type.
- Memory address pointers can only be used in specifically marked “unsafe” blocks and require permissions
- No instruction to “free” memory. Only garbage collection.
- Try-finally block.
- No “multiple inheritance” but interfaces supported.
- Operator overloading allowed.
- More type-safe (only integer widening allowed).
- Enumeration members are scoped.
- Property syntax for getters and setters.
- No checked exceptions.
- some functional programming features like function objects and lambda expressions.

## **94: Why Breaks Points Are Used?**

**Answer:**

It Allows the Stopping Program during Execution

## **95: Why XML is used?**

**Answer:**

It is Used to EXCHANGED the DATA. And It is a Stricter version of HTML.

## **96: What are the Method of XML Documents?**

**Answer:**

It has TWO method.

- ❖ XMLDOCUMENT
- ❖ XMLREADER

For More Details, See HO Page No 49:

## **97: How to represent the XML code in C#? or Convert the XML code in C#.**

### Answer:

```
<Button xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation" Content="OK"/>
```

And the corresponding C# code is

```
System.Windows.Controls.Button b= new System.Windows.Controls.Button();  
B.Content= "OK";
```

98: Difference Between x:classmodifier and x:filedmodiefier.  
Answer:

x:classmodifier= visibility, public

by default, x:filedmodiefier= - field

visibility (internal def)

99: Syntax of XML in Attached Property.

```
<Window xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
```

Answer:

100: Write XAML code to create a "stackpanel" having four Buttons withdock setting i.e. Top,center,Bottom and Stretch

```
<stackpanel>  
Answer:  
<Button horizontalalignment="Left" Background="Red">Left</Button>  
<Button horizontalalignment="Center" Background="Orange">Center</Button>  
<Button horizontalalignment="Right" Background="Yellow">Right</Button>  
<Button horizontalalignment="Stretch" Background="Lime">Stretch</Button>  
</stackpanel >
```

101: Write XAML code to create a "stackpanel" having four Buttons withdock setting i.e.left and top except button which overrides it. Textblock doesnt strech like a control.

Answer:

```
<stackpanel>  
<Button horizontalcontentalignment="Left" Background="Red">Left</Button>  
<Button horizontalcontentalignment="Center" Background="Orange">Center</Button>  
<Button horizontalcontentalignment="Right" Background="Yellow">Right</Button>  
<Button horizontalcontentalignment="Stretch" Background="Lime">Stretch</Button>  
</stackpanel >
```