UNIT I

1. What do you mean by SDK?

It is an acronym for **Software Development Kit**. It is a set of tools designed to help C programmers create Windows applications. The Windows SDK consists of the following elements:

- A large set of books describing functions messages, structures, macros and resources.
- Various tools including a dialog editor and an image editor.
- On-line help files.
- A set of Windows libraries and header files.
- Sample Windows programs in C.

2. Give some common Simple Win32 data types defined in the Windows header files.

Data types are BOOL, BYTE, CHAR, DWORD, HANDLE, LONG, LPCSTR, LPSTR, SHORT, UINT, WORD.

3. Define static data.

Static data is any portion of the program that is not executed as machine instructions and which does not change as the programs executes. The Windows term for static data is **Restore data** or **Resources.**

4. What do you mean by calling convention?

Calling conventions indicate the order in which the arguments are passed to a function when a function call is made. VC++ supports different conventions like _cdecl ,_stdcall , _fastcall, thiscall.

5. What is Hungarian Notation?

It is a variable-naming convention so called in the honour of the legendary Microsoft programmer Charles Simonyi. According to this convention the variable name begins with a lower case letter that denotes the data type of the variable. E.g.) sz of szCmdLine stands for string terminated by zero.

6. What is a handle?

A handle is simply a number (usually 32 bits in size) that refers to an entity. The entity could be a window, an icon, a brush, a cursor, a file or any such entity.

7. What is Windows Programming?

Windows Programming uses GUI concept. It is an event-driven Programming. An Application Window will respond to the events by generating a message by the Operating System. It uses graphics for organizing user workspace. Programs that run within Windows also use GUI. E.g.: Word, Excel. These application programs use some built-in functions present in API.

8. List the main header files in Windows Programming?

WINDOWS.H, WINDEF.H, WINNT.H, WINBASE.H, WINUSER.H, WINGDI.H

9. What is an API?

API is an acronym for Application Programming Interface. It is simply a set of functions that are part of Windows OS. Calling the functions present in the API can create programs.

10. What are the steps required to create a window?

The steps required to create a window are,

a. Registering Window Class
b. Create a Window using create function
c. Message Loop to process events
d. Window Procedure with specific tasks for messages.

11. What are the steps to display the window?

After the window is created to display the window on the screen two functions are used.

i. Show window –puts the window on the display

ShowWindow(hwnd, iCmdShow);

ii. Update window-causes the client area to be painted.

Causes the client area to be painted by sending the window procedure a WM_PAINT message.

UpdateWindow(hwnd);

12. Define message loop.

Windows maintains a "message queue" for each Windows program currently running under Windows. When an input occurs, Windows translates the event into a "message" then it places in the program's message queue. A program retrieves these messages from the message queue by executing a block of code known as the "message loop":

```
while(GetMessage(&msg, NULL, 0, 0))
{
    TranslateMessage(&msg);
    DispatchMessage(&msg);
}
```

13. Define Default Window Procedure.

When a window procedure processes a message, it should return 0 from the window procedure. All the messages that a window procedure chooses not to process must be passed for default processing. This default processing is done by a Window's function named DefWindowProc.

DefWindowProc(HWND hwnd, UINT message, WPARAM wParam, LPARAM lParam);

14. Define Device Context.

The device context ("DC") is a data structure maintained internally by GDI. A device context is associated with a particular display device, such as a video display or a printer. For a video display, a device context is usually associated with a particular

window on the display. Some of the values in the device context are graphics "attributes". These attributes define some particulars of how GDI drawing functions work.

15. What are the two methods for getting a device context handle?

Method 1: This method is used when WM_PAINT messages is processed. Two functions are involved: Begin Paint and End Paint.

```
case WM_PAINT:
        hdc = BeginPaint (hwnd, &ps);
              [use GDI functions]
      EndPaint(hwnd,&ps);
      return 0;
```

Method 2:

To get a handle to the device context of the client area of the window GetDC is called. ReleaseDC is used to release the DC handle.

```
hdc=GetDC(hwnd);
      [use GDI functions]
ReleaseDC(hwnd,hdc);
```

16. What is the use of GetMessage?

The GetMessage function retrieves a message from the queue and copies it to a structure of Type MSG.

17. What is the use of TranslateMessage?

A message Loop include TranslateMessage., if the message loop receive character input from the keyboard, the system generates virtual key messages CW_KEYDOWN and WM_KEYUP to each key the user process.

18. What is the use of Dispatch Message?

The Dispatch Message function sends a message to the window procedure associated with the window handle specified in the MSG structure.

19. What is WM_PAINT message?

The message is generated when a part or all of the windows client area is "invalid" and must be "updated" which means that it must be redrawn or "painted".

20. Give some Common Structured Win32 data types defined in the Windows header files

Data types are BITMAP, LOGBRUSH, LOGFONT, LOGPEN, MSG, POINT, RECT, WNDCLASS.

21. Give some Resources

- Icons
- Cursors
- Character strings
- Custom resources
- Menus
- Keyboard accelerators

- Dialog boxes
- Bitmaps

22. Define event driven?

Event driven means the flow of program execution is controlled by that event that occurs as the program is running.

23. What is WM_DESTROY message?

WM_DESTROY message indicates that a window is in the process of destroying a window based on a command from the user. The message is a result of the user clicking on the close button or selecting close from the program's System message.

24. How a Window program is terminated?

When the postQuit message function is invoked it inserts a WM_QUIT message in the Program's message queue. GetMessage returns zero for WM_QUIT message. This causes WinMain to come out of the Message Loop. The program then returns msgWParam and is terminated.

25. What is GDI?

The Graphics Device Interface (GDI) provides functions and related structures that an application can use to generate graphical output for displays, printers and other devices.

26. Classify GDI functions.

The several functions that comprise GDI can be classified into:

i. Functions that get DC and release DC.
ii. Functions that get information about DC.
iii Functions that draw something on the client area.
iv. Functions that set and get attributes of DC.
v. Functions that work with GDI primitives.

27. What are GDI primitives or objects?

GDI primitives or objects refer to the types of graphics that can be displayed on the client area. They are:

i. Lines and curves
ii. Filled areas
iii. Bitmaps
iv. Text

28.What is a window and Windows?

Windows is an Operating System (s/w that controls h/w) and window is a rectangular area which receives input and displays output in the form of text and graphics.

29. Define Child windows.

A window can have a parent window. A window that has a parent is called a child window. The parent window provides the coordinate system used for positioning the

child window. A window that has no parent or whose parent is desktop window is called a top-level window.

30. Give some child window controls.

Some of the child window controls are Edit box, Group box, Push Button, Check box, Radio button, static box.

31. What are the fields in MSG structure?

HWND: The handle to the window which the message is directed to
MESSAGE: The message identifier. This is a number that identifies an event
WPARAM: A 32-bit message parameter .The meaning and value of which depend on the particular message.
LPARAM: Another 32-bit message parameter dependent on the message.
TIME: The time the message was place in message queue.
PT: The mouse coordinates at the time the message was placed.

32. What are queued and non-queued messages?

The queued messages are those that are placed in a programs message queue by Windows. The non-queued messages are not posted to a message queue. The non-queued messages are the results of calls by Windows directly to window procedure.

33.Give some messages used in windows?

WM_CREATE: This message is sent when a window is being created.
WM_LBUTTONDOWN: This message is sent when the user press the left.
WM_CHAR: This message is sent when the user types a character.
WM_CLOSE: This message is sent when the user closes a window.
WM_COMMAND: This message is sent to appropriate window in response to user menu choices, dialog button clicks and so on.

34. Write the prototype of WinMain function?

WinMain Function Prototype:

int WINAPI WinMain (HINSTANCE hinstance, HINSTANCE hprevinstance, PSTR szcmdline, int icmdshow)

35.Name the important DLL files which are used for windows programming?

KERNEL32.DLL, USER32.DLL, GD132.DLL

UNIT II

36. What is an Application framework?

Application framework is "an integrated collection of object-oriented software components that offers all that's needed for a generic application.

37. What are the features of Application framework?

i.Application framework applications use a standard structure.
ii.Application framework applications are small and fast.
iii.The VC++ tools reduce coding drudgery.

iv.The MFC library application framework is feature rich.

38. What are the VC++ components?

The VC++ components are

1.Project	2. Resource Editor	3.C/C++ Compiler
4.Source Code editor	5.Resource compiler	6. Linker
7. Debugger	8. Application Wizard	9. Class Wizard
10. Source browser	11. Gallery	12. Windows Diagnostic tools
13. Online help	14. Source code control	15. MFC library

16. Active Template Library (ATL).

39. What is an Application Wizard?

Application Wizard is a code generator that creates a working skeleton of a Windows application with features , class names and source code file names that are specified by the user. AppWizard gets started when a new application either Single Document Interface or Multiple Document Interface or Dialog based application is created.

40.What is a Class Wizard?

Class Wizard is a tool using which member variables; messages and ActiveX events are incorporated into a project. Class Wizard is a program implemented as a DLL, that's accessible from VC++ view menu. Class Wizard write the prototypes, function bodies and if necessary the code to link windows message to the function.

41. What are the important classes of an VC++ program?

i.Application class CMyApp:public CWinApp

This class creates all components required for an application, receives all user inputs and events and pass the message to View and Frame classes.

ii.Frame class CMainFrame:public CFrameWnd

This class is the Window frame. It holds menu bar, status bar, and other resource attached to the frame.

iii.View class CMyView:public CView

This class provides the visual representation.

iv.Document class CMyDoc:public CDocument

This class stores all the information about the changes done in output window.

42.Define Message map.

Message map is used to add member functions for the events. It contains the project lists, all the classes contained in the project which includes both built-in and user defined classes.

43. Define Mapping modes.

Mapping mode is a device context attribute that defines how Windows maps logical coordinates that are specified in GDI functions to device coordinates of the particular device.

44. Give two Mapping mode functions.

SetMapMode(hdc, iMapMode): Set the mapping mode, where iMapMode is one of the eight mapping mode identifiers.

iMapMode=GetMapMode(hdc): Obtain the current mapping mode.

45. What are the Mapping Mode identifiers?

MM_TEXT , MM_LOMETRIC , MM_HIMETRIC , MM_LOENGLISH , MM_HIENGLISH , MM_TWIPS , MM_ISOTROPIC , MM_ANISOTROPIC.

46. What are the types of mapping modes?

- MM_HIMETRIC
- MM_ANISOTROPIC
- MM_ISOTROPIC

47. What is a Fixed-scale mapping mode?

All Fixed scale-mapping modes have a actual scale factor. In these mapping modes, x value increases while moving the cursor right and y value decrease as the cursor is moved down. The Fixed scale mapping modes are MM_LOENGLISH, MM_HIENGLISH, MM_LOMETRIC, MM_HIMETRIC, and MM_TWIPS.

48. What is a Variable-scale mapping mode?

With these mapping modes, drawing can change the size as the user changes the size of the window. The two Variable-scale mapping modes are MM_ISOTROPIC, MM_ANISOTROPIC.

49.What are GDI objects?

A window GDI object type is represented by an MFC library class. CGdiObject is the abstract base for the GDI object classes. A c++ object of a class derived from CGdiObject represents a windows GDI object.

50.Mention some of the GDI derived classes?

- CBitmap
- CBrush
- CFont
- CPalette
- CPen
- CRgn

51. What is system font?

The system font is the font that windows use by default for text string like strings in title bars, menus and dialog boxes. The system font is a razor font, which means that the characters are defined as block of pixels. The size of the character in the system font is based on the size of title video display.

52.What is the use of get system metrics function?

The function retrieves information about the size of various graphical item in windows such as icon, occurs, title bars and scroll bars. This function is an important

function for achieving device independent graphical outline in the program. This needs a single argument called an index. This function returns an integer usually the size of the item specified in the argument.

53. Explain the display context classes CClientDC and CWindowDC?

Window's client area excludes the border, the caption bar, and the menu bar. If we construct an object of class CClientDc, the point (0,0) is at the upper-left corner of the client area. If we construct an object of class CWindowDC the point (0,0) is the upper-left corner of the non-client area.

54. What is the state of the device context?

The current state of the device context includes the following:

- Attached GDI drawing objects such as pens, brushes, and fonts.
- The mapping mode that determines the scale of items when they are drawn.
- Various details such as text alignment parameters and polygon filling mode.

55. Define font.

A font is complete collection of characters of a particular typeface and a particular face. Fonts are generally stored on disk as resources (GDI fonts), and some are device specific (Device fonts).

56.What are the types of GDI fonts?

There are three different types of GDI fonts:

i. Raster fonts ii. Stroke fonts iii. True type fonts.

57. What is a dialog box?

A dialog or dialog box is a window that receives messages, that can be moved and closed , and that can even accept drawing instructions in its client area. Dialog boxes belong to a predefined , exclusive window class. Applications do not have direct access to the predefined window class, but they can use the dialog box procedure to modify the style and behavior of a dialog box.

58.What is a modal dialog box?

A modal dialog box does not allow the user to switch away from it after it is invoked. It should be dismissed first before switching to any other window.
E.g.)Open dialog box of a file menu in MS-WORD.

59.What is a modeless dialog box?

A modeless dialog box allows the user to switch to other windows without dismissing it first. Because of this, the variable used to implement the modeless dialog box should not go out of scope in the dialog box's lifetime.
E.g.) Find and Replace dialog of MS-WORD.

60.List Windows common Dialog classes?

- ✓ CColorDialog
- ✓ CFileDialog
- ✓ CFindReplaceDialog
- ✓ CPageSetupDialog
- ✓ CFontDialog
- ✓ CPirntDialog

61.List out the Windows common controls.

The Windows common controls are:

1.Track bar control or Slider control 2. Progress indicator 3. Spin button control 4. Image List control 4. Edit controls 5. Animation control 6. Combo BoxEx control 7.IP address control 8.Month calendar control 9.Date and Time control 10. Tree control

62.What are dialog controls?

A dialog contains a number of elements called controls.

Dialog controls include:

Edit controls, Buttons. List boxes, Combo boxes, Static text, Tree views, progress indicators, Sliders.

63. What is a Bitmap?

A bitmap is an array of bits in which one or more bits correspond to each display pixel. Bitmap is a GDI object and it allow computers to store complex images in the form of 0's and 1's.

64.What is a message box?

A message box is a special dialog box that can use to display messages and prompt for simple input. A message box typically contains a text message and one or more buttons. Message box is a modal dialog box and the system creates it by using the same internal functions that Dialog Box uses.

65.What are the types of bitmaps?

There are two kinds of bitmaps:

i. GDI bitmap or Device Dependent Bitmaps.

ii. DIBs or Device Independent Bitmaps.

66. List the types of video cards used to display the colors

- ➢ 256 color video card(8 bit)
- ➢ 16 bit color video card
- ➢ 24 bit color video card

UNIT III

67. What do you meant by Document view Architecture?

The MFC library contains applications and frame classes plus two other classes that represent the "document" and "view". This document-view architecture is the core of the application framework and is loosely based on the Model/view/ Controller classes. Document-view architecture separates data from the user's view of the data.

68. What is a Menu?

A menu is a familiar application element that consists of a top-level horizontal list of items with associated pop-up menus that appear when the user selects a top-level menu.

69.What is an Accelerator?

Accelerators are short cut keys that help to choose multiple level options of menu with a single key. A keyboard accelerator entry does not have to be associated with menu item.

70. What are the functions used to load a menu?

MFC provides a class for menus, CMenu. This supports creating menu items. The functions used are:

i.Load Menu ii. Set Menu iii.Detach

```
CMenu    m;
m.LoadMenu();
m.SetMenu();
m.Detatch();
```

71. What is a floating pop-up menu?

A Floating Pop-up menu is the menu that is displayed while right clicking the mouse any where in the window.

72.Classify menu?

A menu is a GUI, which contains a list of menu items.

The various types of menu are,

i. System Menus
ii. Popup Menu
iii. Dropdown Menu

73. What is MFC Text Edition?

MFC supports text edition using two options.

i. Edit Control ii.Rich Edit Control.

These are supported by the classes CEditView, CRichEditView.

74.What is a Rich Edit Control?

Rich Edit Control is a MFC text editing feature. It supports mixed font and large quantities of text than ordinary edit control.

75. Define Command processing.

The application frame work provides a sophisticated routing system for command messages. These messages originate from menu selections, keyboard accelerators, and toolbars and dialog button clicks. Command messages can also be sent by calls to functions SendMessage and PostMessage which belong to CWnd class.

76.What is a toolbar?

Toolbars are menu item equivalents. They are represented as icons. Each toolbar is associated with a menu item. A toolbar consists of horizontally (or vertically) arranged graphical buttons that must be clustered in groups. Toolbar is an object of CToolBar.

77.Define Tooltip.

When the user positions the mouse on a toolbar button for a certain interval , text is displayed in a little box next to button which is called as a Tooltip.

78. Define Status bar.

The status bar window neither accepts user inputs nor generates command messages. Its job is simply to display text in panes under program control. The status bar supports two types of text panes - message line panes and status indicator panes.

79.Give the Static Indicators array of status bar.

The static indicators array that App Wizard generates in the MainFrm.cpp file defines the panes for the application's status bar.

```
Static  UINT indicators[]=
{
        ID_SEPARATOR,
        ID_INDICATOR_CAPS,
        ID_INDICATOR_NUM,
        ID_INDICATOR_SCRL,
};
```

The constant ID_SEPARATOR identifies a message-line pane; the other constants are string resource IDs that identify indicator panes.

80.Give the functions to set the Status Indicators.

The function CStatusBar::SetIndicators configures the status bar by the information in the Indicator array. The function CStatusBar::SetPaneText is used to display the text in the pane.

```
CMainFrame *pFrame=(CMainFrame *)AfxGetApp()->m_pMainWnd;
CStatusBar *pStatus=&pFrame->m_wndStatusBar;
pStatus->SetPaneText(0,message in the pane);
```

81.What are the steps to be followed to build floating popup menus

i) Use the menu editor to insert a new, empty menu in your project's resource file.

ii) Type some characters in the left top-level item, and then add your menu item

in the resulting pop-up menu.

iii) Use class wizard to add a WM_CONTEXTMENU message handler in your view class that receives mouse-click messages.

82. What is a reusable frame window?

A frame class that would remember its window size and position is known as "Reusable Frame Window".

83.What is Windows Registry?

Windows Registry is a set of system files in which Windows and the individual applications can store and access permanent information.

84.Define Serialization.

Objects can be persistent, which means they can be saved on disk when a program exits and then can be restored when the program is restarted. This process of saving and restoring objects is called "Serialization."

85.Define Splitter Window.

A splitter window appears as a special type of frame window that holds several views in panes. Window can be divided horizontally, vertically , or both horizontally and vertically using movable splitter bars.

86.What are the types of Splitter Window?

There are two types of Splitter Window.

i. Static Splitter Window: The number of rows and columns in a static splitter window are set when the splitter is created and cannot be changed by the user. A static splitter window can have a maximum of 16 rows and 16 columns.

ii. Dynamic Splitter Window: A dynamic splitter window is limited to a maximum of 2 rows and 2 columns , but it can be split and unsplit interactively. The number of rows and columns in a dynamic splitter window can be changed by the user.

87.What is Diagnostic Dumping?

Diagnostic dumping is the process by which the memory allocated to objects are analyzed and freed.

88.How to make a class serializable?

A serialization class must be derived directly or indirectly from CObject. In addition, the class declaration must contain the Declare-serial macro call, and the class implementation file must contain the implement-serial macro call.

89. What are the characteristic of SDI frame window?

SDI (single document interface) frame window has the following characteristic.

- Window Size
- Window Position
- Window status
- Windows Status

- Toolbar and status bar enabling and positioning.

90. What do you mean by a DLL?

DLL stands for Dynamic Link Libraries. A DLL is a binary file that provides a library of functions, objects and resources. All the API functions are contained in Dynamic Link Libraries. The function present in DLL can be linked during execution.

91. What are the types of DLLS?

The types of DLLs are:

i. Regular DLLs: It can export only C-style functions. It can't export C++ classes, member functions, or over loaded functions.

ii.Extension DLLS: It supports C++ interface. An extension DLL dynamically links to the code in the DLL version of the MFC library.

92. What is a Custom Control DLL?

DLLs are used for Custom controls are called Custom Controls. It acts like an ordinary control, such as edit control, in that it sends WM_COMMAND messages to its parent window and receive user-defined messages.

93.What is Dynamic Linking?

Dynamic linking is a process of connecting the symbolic names with address of corresponding functions. There are two types of linking:

i. Implicit linking and ii. Explicit linking.

94.What is Implicit linking?

When a DLL is build, the linker produces a companion import LIB file, which contains every DLL's exported symbols and ordinals, but no code. When the client is loaded, Windows finds and loads the DLL and then dynamically links it by symbol or by ordinal.

95.What is Explicit linking?

When explicit linking is used, LoadLibrary function is called, specifying the DLL's path name as a parameter. LoadLibrary returns an HINSTANCE parameter that can be used to call GetProcAddress function , which converts a symbol or ordinal to an address inside the DLL.

96.What are the benefits of Run-time Dynamic linking?

The benefits of Run-time Dynamic linking are:

i.When the DLL is not available , an application using load-time dynamic linking simply terminates, while the dynamic linking is able to respond to the error.

ii.If the DLL changes, an application that uses load-time dynamic linking may terminate, while an application linked at run-time is only affected if the desired functions are not present in the new DLL.

97. What is a view?

From a user's stand point, a view is an ordinary window that the user can size, move, and close in the same way as any other Windows-based application window. From the programmer's perspective, a view is a c++ object of a class derived from the MFC library.

98.Difference between single and multi document interface.

Single document interface : An SDI application has, from the user's point of view, only one window. If the application depends on disk-file "document", only one document can be loaded at a time. The original windows notepad is an example of SDI application.

Multi document interface : An MDI application has multiple child windows, each of which corresponds to an individual document. Microsoft word is a good example of MDI application.

99.What are the disadvantage of using DLL?

- The programmer must have access to the source code and must be using the same programming language with same compiler setup.
- Memory and disk space will be wasted if several programs which use the same library of code are running simultaneously.

100.What is Load Library() function?

Load Library () call is used to map the DLL module into the memory of our process. The function takes a single parameter, the name of the module to load.

```
HMODULE hMyDll;
hMyDll=load Library ("my Lib");
if (hMyDll=null)        // could not load DLL
```

101.What is GetProcAddress () function?

The address for the individual functions before using them once the DLL has been loaded properly. This is done by calling ::GetProcAddress() with the handle returned by LoadLibrary() and the name of the function. If the function is found this will return a generic pointer to a function. If the function is not found, GetProcAddress() returns NULL.

UNIT IV

102. Define ActiveX controls.

ActiveX controls are known as programmer built control which can be used in Window application. ActiveX is a Microsoft term refer to group of components that include controls, DLL and ActiveX documents.

103. Define COM (component object model)

COM is a protocol that connects one software module with another and then drops out of the picture. After the Connection is made the two modules can communicate

through a mechanism called an interface. COM is an industry standard s/w architecture supported by Microsoft and many other companies.

104. What are the features supported by COM?

COM provides a unified expandable object oriented communications protocol for windows

i) A standard language-independent way for a win32 client EXE to load and call a win32 DLL.

ii) A general-purpose way for one EXE to control another EXE on the same computer.

A replacement for the VBX control is an ActiveX control.

105.What is the use of IUnknown interface?

I Unknown is a special interface to obtain the interface pointer declarled by com.

106.What is class factory?

A class object is sometimes called as a class factory because it often implements a special com interface named IClassFactory.

107.What is the use of CLSIDFromProgID?

Com supports other types of registration database entry that manufactures a human-readable program ID into the corresponding Class ID. The com function USIForm program ID reads the database and perform the manipulation.

108.What is the purpose of the DECLARE-INTERFACE-MAP macro?

The DECLARE-INTERFACE-MAP macro generalizes the declarations for a table that holds the IDs of the class's entire interface.

109.List out the four states that an embedded object can assume?

The four states are given below

i) Passive
ii) Loaded
iii) Running
iv) Active

110.What are the special features of container?

- ❖ It handle multiple documents
- ❖ Maintains a temporary storage
- ❖ Allows embedded objects to be copied and cut to the clipboard and parted
- ❖ Allows an embedded object to be deleted

111.How a COM client calls out-of process components?

In case of an out- of process components COM uses its remoting architecture which usually involves RPCS (remote procedure calls). In an RPC, the client makes calls to a special dll called a proxy. Proxy sends a stream of data to a stub which is inside a dll. In the components process when the client calls a components function, the proxy alerts the stub. The mechanism of converting parameters to and from data streams is called

marshaling.

112. Define Object Model.

The Component Object Model specifies architecture, a binary standard and a supporting infrastructure for building, using and evolving component-based applications. It extends the benefits of object oriented programming such as encapsulation, polymorphism software reuse to dynamic computing.

113.What is DCOM?

DCOM stands for Distributed Component Object Model is the distributed extension of COM. It specifies the additional infrastructure that is required to further extend the benefits to networked environments.

114.What are main features of COM?

The features of COM include the separation of interfaces and implementations, support for objects with multiple interfaces, language neutrality, runtime binary software reuse, location transparency, architecture for extensibility, support for indirection approach to versioning and different styles of sever lifetime management.

115.Write short notes on Versioning.

COM's approach to versioning is based on the following three requirements:-

i) Any interface must be immutable.
ii) A new implementation of same CLSID must support existing interfaces.
iii) Any client must start interacting with a server by querying an interface with an ID.

116.Define OLE.

OLE stands for Object linking and Embedding. OLE is at the core of window applications. It is also a very complex technology that could be difficult to master without the help of MFC.

117.What are the applications of OLE?

i) Compound documents.
ii) OLE controls.
iii) OLE automation.
iv) OLE drag and drop.
v) Specialized-MAPI.

118.What is marshaling?

In a remote procedure call the client makes calls to proxy. The proxy sends a stream to a stub. When the client calls the component function the proxy alerts the stub by sending the message to the component program. The mechanism of converting parameters to and from data stream is called Marshaling.

119.Write the difference between Ordinary control and ActiveX control.

Windows controls send notifications to their owners by sending messages; ActiveX controls send notifications to their containers by firing events.

UNIT V

120. What are the advantages of using a real DBMS?

i) Use of standard file formats

ii) Indexed file access

iii) Data integrity safeguards

iv) Multi-user access control

121.Expand the following; Blob, SDK, API, ODBC, DAO?

Blob - binary large object
SDK - software development kit
API - application programming interface
ODBC - open database connectivity
DAO - data access object

122. What is process and thread?

A process is a running program that owns its own memory, file handles and other system resources. The separate execution paths that an individual process can contain are called as threads.

123. What are the two kinds of thread?

Windows offers two kinds of threads namely

i) Works threads

ii) User interface thread

124.Define ODBC?

The Microsoft open database connectivity(ODBC) standard defines the rules of SQL grammar and also the c-language programming interface to any SQL database. Any DBMS that has an ODBC driver can be occurred by a single compiled c or c++ program odbc thus separate the user interface from the actual database management process.

125.What are the methods of Binary Interface method?

The first three methods are:-

i) Query Interface() for navigating between interfaces of the same object instance.

ii) AddRef() for incrementing reference counts.

iii) Release() for decrementing reference counts.

126.Write short notes on Threading Model.

If an application allows multiple clients to concurrently invoke methods of the same COM object, some synchronization mechanisms needs to be provided to protect the data. A partment is logical grouping of object that share the same concurrency constraints, every COM process can have at most one multithread apartment but it can contain multiple Single Thread Apartments(STAs).

127.What is MTS?

MTS stands for Microsoft Transaction Server provides another style of server programming. MTS provides server objects, must be implemented in the form of DLLs that are to be hosted by MTS surrogate processes. MTS provides context objects for these server objects so that they can participate in transaction.

128.What is RFX and where is it used?

RFX is the acronym for Record Field Exchange. The MFC framework can move data back and forth between the database and the member variables of your CRecordSet by using record field exchange which works very much like the Dialog Data Exchange mechanism used by the dialogs and controls.

129.What is the use of CRecordSet :: dynamic?

This type uses a dynamic cursor which allows scrolling in both directions. This type of record set allow only forward scrolling will not reflect any changes made to the database.

130.What are the steps to create sample database?

The steps are:-

i) Start MS Access

ii) Create a new table

iii) Populate the table

131. Write the general syntax to create a table. Give one example.

Syntax:-CREATETABLE: table-name({column name data type},…….)

Example:-

```
CREATE TABLE Employee
{
EmpID       INTEGER,
EmpName     VARCHAR(50)
Salary      NUMERIC(6,2)
Exp         NUMERIC(5)
}
```

132. How to use Single Row Functions?

For functions such as CRecordSet:: GetField Value () which work on a single row then you set the current row within row set. This is done with the set row SetCursorPosition () member in CRecordSet.

133.What is Data transfer and what are its two structures?

Transferring data between application are accomplished through the one data object interface which provides a mechanism for transferring data and also for notifications of change in the data.

The two structures are:-

i) FORMATETC

ii) STGMEDIUM

134. List the MFCWinIent classes

i) CInternetSession

ii) CHttpConnectin

iii) CFtpConnection

iv) CGopherConnection

v) CInternetFile

vi) ChttpFile

vii) CFtpFileFind

viii) CGopherFileFind

ix) CinternetException

135. List the advantages of WinInet over Winsock

1. Caching
2. Security
3. Web proxy access
4. Buffered I/O
5. Easy API
6. User Friendly

136.Define ISAPI Server Extensions.

An ISAPI Server Extension is program that runs in response to a GET or POST request from a client program. The Browser can pass parameters to the programs, which are often values that the browser user types into edit, controls, selects from list boxes and so forth. It typically sends back HTML code based on those parameter values.

137.List MFC ISAPI Server Extension classes

i) CHttpServer

ii) CHttpServerContext

iii) CHtmlStream

138. Define WINSOCK.

Winsock is the lowest level Windows API for TCP/IP programming. Part of the code is located in wsock32.dll and part is inside the Windows kernel.

139.List the components of OLEDB Architecture.

i. Enumerators
ii. Data source objects
iii. Commands
iv. Row sets
v. Errors
vi. Transaction objects.

140.What is WinInet?

The WinInet (Windows Internet) is a higher-level API than winsock and is a collection of high-level functions that assist a programmer in using three popular Internet protocols: the Hypertext Transfer Protocol (HTTP) used for the World Wide Web, the

File Transfer Protocol (FTP), and another file transfer protocol known as Gopher in both asynchronous and synchronous modes.

141. Define IIS.

Microsoft IIS (Internet Information Server) is a high-performance Internet/Intranet server that takes advantage of Windows NT features such as I/O completion ports, the win32 function TransmitFile, file-handle caching, and CPU scaling for threads. IIS is a special kind of Win32 program called a service actually three services-WWW, HTTP, and gopher - in one program called inetinfo.exe.

142.Define ISAPI.

An ISAPI (internet Service API) server extension is a program that runs in response to a GET or POST request from a client program(browser).

143.What is Multi threading?

It is the ability for a program to multitask within itself. The program can split itself in to separate "threads" of execution that also seem to run concurrently.

144.Write the MFC WinInet Classes.

CInternetSession, CHttpConnection, CFtpConnection, CGopherConnection.

145.Write the MFC ODBC Classes.

CDatabase, CRecordSet, CRecordView.

146.Write the MFC DAO Classes.

CDaoDatabase, CDaoRecordSet, CDaoTableDef, CDaoQueryDef, CDaoWorkspce, CDaoException, CDaoFieldExchange.

147. Differentiate NTFS from FAT.

NTFS

- Network File System
- More Secured
- User Permission for individual files and folders
- Used with WinNT and above

FAT

- File Allocation Table
- Less Secured

- No individual user permissions
- Used with Win 95,98

148. What is Snapshot and Dynaset?

Snapshot is a RecordSet type. Snapshot downloads the entire query in one shot. But occupy more memory to hold data. It has data as a static copy. When any changes made to the database will not reflect to the current application.

Dynaset is a RecordSet type. In Dynaset only the records you actually need to fill the screen will get downloaded. Constantly resynchronizes the recordset, so that any changes will reflect immediately. Take less time to reflect.

16 marks

Unit I

1. Write a VC++ program to create a window. Explain all the functions and message loop.
2. Explain in detail about the architectural overview of windows programming?
3. Explain GDI function and GDI primitives.
4. Explain the two methods used for getting Device Context Handle?

   Ans:-

   Method 1

   By processing WM_PAINT message
   Two function used: Beginpaint()
   Endpaint()

   Method2
   By calling the function
   GETDC()
   ReleaseDC()
5. Explain child window controls?

Unit II

1. Explain various visual C++ components?
2. I) Explain in detail bitmaps loading into your application.

   II) Write a VC++ program to display the sum of two numbers using modal and modeless dialogs.

3. I) Write a VC++ program to draw a rectangle & ellipse.

   ii) Explain mapping models?

4. Explain MFC library in detail.

5. Explain windows common controls?

Unit III

1. What is DLL? Create a DLL to add & multiply two numbers and how it can be used in application?

2. What is a keyboard accelerator? Explain how to implement the accelerator in a Toolbar? Explain with example?

3. Write a VC++ program to display keyboard pressed?

4. I) Write a VC++program to display mouse coordinates?

   ii) Explain splitter window & multiple views?

5. Explain document view architecture?

Unit IV

1. What is an Active X control? How to build an application that uses a calendar control in a dialog?

2. Explain in detail container-component interaction?

3. Explain OLE drag & drop?

4. Create an Active X control at runtime? (Or) Write a VC++ program to create a Dynamic ActiveX control?

5. Explain COM?

Unit V

1. What is a DBMS? What is an SQL? Explain MFC ODBC classes? Explain filter & short strings?

2. I) Explain with example the Winsock class?

   ii) Explain Threading?

3. Explain data access through ODBC with example?

   Answer

   i) Database creation

   ii) Open VC++

   iii) Connect database with VC++ through ODBC.

4. Write a VC++ program for chat application.

5. Write a VC++ program for playing an

   i) Audio file

   ii) Video file