

## SKU-C++ Programming

This course deals with programming concepts and the object-oriented features of C++ programming language. It is assumed that the learner is new to programming. Illustrative examples follow each new concept. We include quiz which help learner to understand the depth of the basic concepts.

```
#include<iostream.h>
#include <conio.h>
void main() {
    char cName[7][10];
    int i;
    for(i=0;i<7;i++) {
        cout<<"Enter weekday"<<i+1;
        cin>>cName[i];
    }
    for(i=0;i<7;i++) {
        cout<<"Weekday"<<i+1<<"is"
        <<cName[i]<<"\n";
    }
}
```

**Output Window**

```
Enter weekday4 Wednesday
Enter weekday5 Thursday
Enter weekday6 Friday
Enter weekday7 Saturday
```

**Memory**

i										
cName										
	0	1	2	3	4	5	6	7	8	9
0	S	u	n	d	a	y				
1	M	o	n	d	a	y				
2	T	u	e	s	d	a	y			
3	W	e	d	n	e	s	d	a	y	
4	T	h	u	r	s	d	a	y		
5	F	r	i	d	a	y				
6	S	a	t	u	r	d	a	y		

### Topics covered in SKU- C++ Programming:

#### Introduction

**Topics Covered:** Need of Computer language, Definition of C++, Object-oriented programming, Examples, Polymorphism, Inheritance, Encapsulation, Installation process of C++, Turbo C++ editor, Different Menus in Turbo C++ and their functionality.

#### Fundamentals of C++

**Topics Covered:** Structures, Header files, Classes and Objects, Types of Identifiers, Definition, Diagram, Table, User defined data types, Union, Enumerated data types, Derived data types, Arrays, Functions, Pointers, Constants, literal constants, Defining constants,

Variable declarations, Operators, What are Statements, Sequential Statements, Control Statements, Loops, Expression, and Strings.

### Arrays and Pointers

**Topics Covered:** Array, Initialization and declaration of Array, Examples, Types of Array, One Dimensional Array, Two Dimensional Array, Multi Dimensional Array, Pointers, Functions, Example, Call by reference, Call by value, Inline Functions, Arguments, Types of Arguments, Overloading, Examples.

### Objects and Classes

**Topics Covered:** Objects, State of an Object, Object Oriented Programming Principles: Encapsulation, Polymorphism, Inheritance, Classes, Diagram, Access Specifier, Local Classes, Special Characteristics, Friend Function, Examples.

### Constructors and Destructors

**Topics Covered:** Constructors, Parameterized Constructors, Constructor Overloading, and Constructor with default argument, Destructor, Type Conversion, Automatic Conversion, Type Casting, Types of Type Casting, Operator Overloading, Types of Operator Overloading, Overloading Unary Operators, and Examples.

### Inheritance

**Topics Covered:** Inheritance, Types of Inheritance: Single Inheritance, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual base class, Abstract Class and Examples.

### Pointers, Virtual Functions and Polymorphism

**Topics Covered:** Pointers, Pointer Initialization, variables of pointer types, Void Pointer, Null Pointer, This Pointer, Pointers to Pointers, and Pointers to Objects, Virtual Functions, its rules and properties, Pure Virtual Functions, Polymorphism, Types of Polymorphism, Static Polymorphism, Dynamic Polymorphism and Examples.

### File Handling

**Topics Covered:** Introduction to Files, Program, Buffer, Processing of File, System Created File, Classes for File Stream Operations, Opening and Closing a File, Detecting End-of File, More about Open (): File Modes, File Pointers and their Manipulations, Sequential Input and Output Operations, Updating a File: Random Access, Error Handling During File Operations, Command-Line Arguments.

### Exception Handling

**Topics Covered:** Basics of Exception Handling, Mechanism, Throwing Mechanism, Catching Mechanism, Specifying Exceptions.

### Print Shots of SKU-C++ Programming:

**Example**

```

File Edit Search Run Compile Debug Project Options Window Help
{
int i;
int *ivar;
ivar = &i;
*ivar = 20;
}
    
```

Memory		
	value	address
i	20	0X100
		0X102
*ivar	0X100	0X104
		0X106
		0X108
		0X10A

**Inheritance**

Main Parent Form: Navigation Panel, Ok, Child Form 1, Child Form 2

Child Form 1: Navigation Panel, Parent, Label 1

Child Form 2: Navigation Panel, Parent

**Class and objects of the Class**

```

class
int x;
int y;
void dis();
void sum();
    
```

Object: int x; int y;      Object: int x; int y;

**Polymorphism**

Shape

Circle, Rectangle, Triangle, Ellipse

**State of an Object**

Car Attributes

- Color, Average, Make, Power, Fuel type (Static)
- Speed, Fuel level, Tyre pressure, Gear (Dynamic)

Values of all attributes at any moment defines the state of the car

**Example**

```

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