



CS1004

Object Oriented Programming



Course Instructor

- Dr. Zeshan Khan
- Assistant Professor
- Office # C503B
- zeshan.khan@nu.edu.pk

Course Outline

Basics of programming, Programming tools, data types, memory sizes for data types, data limits in data types

Conditions, if, Switch, nested if conditions, Array basics, list basics

Loop for and while

Pointers, Functions, pass by value and by reference

Introduction to classes (class keyword),

Course Outline...

Access specifiers, public, private, protected

constructors vs. destructors, copy constructor, overloading constructors, this pointer for function call resolution

Function overloading, introduction to operator overloading, unary and binary operators overloading, member vs. global functions for operator overloading, stream insertion and extraction operators overloading

Course Outline...

Identifying classes and defining relationships, introduction to composition (Association & Aggregation), separating interface from implementation

Introduction to inheritance, types of inheritance, function overriding, function overriding vs. overloading, single vs. multiple inheritance

Introduction to polymorphism, virtual vs. non-virtual functions, abstract vs. concrete classes

Introduction to templates, template functions and template classes

Introduction to STL containers: vector, list, and maps; STL iterators and algorithms



Setup C++

Code in C++

- `#include<iostream>`
- `Using namespace std;`
- `int main()`
- `{`
 - `\\first code`
 - `cout<<"Hello World";`
- `}`
- Header directives
- Namespace (set of classes, functions)
- Return type, function name, parameters
- comments
- Print something on screen

Coding in C++



Print



Comments



Running a
program

Variables and Assignment



Variables (int, float,
double, char)



Assignment




Rules for naming
variables


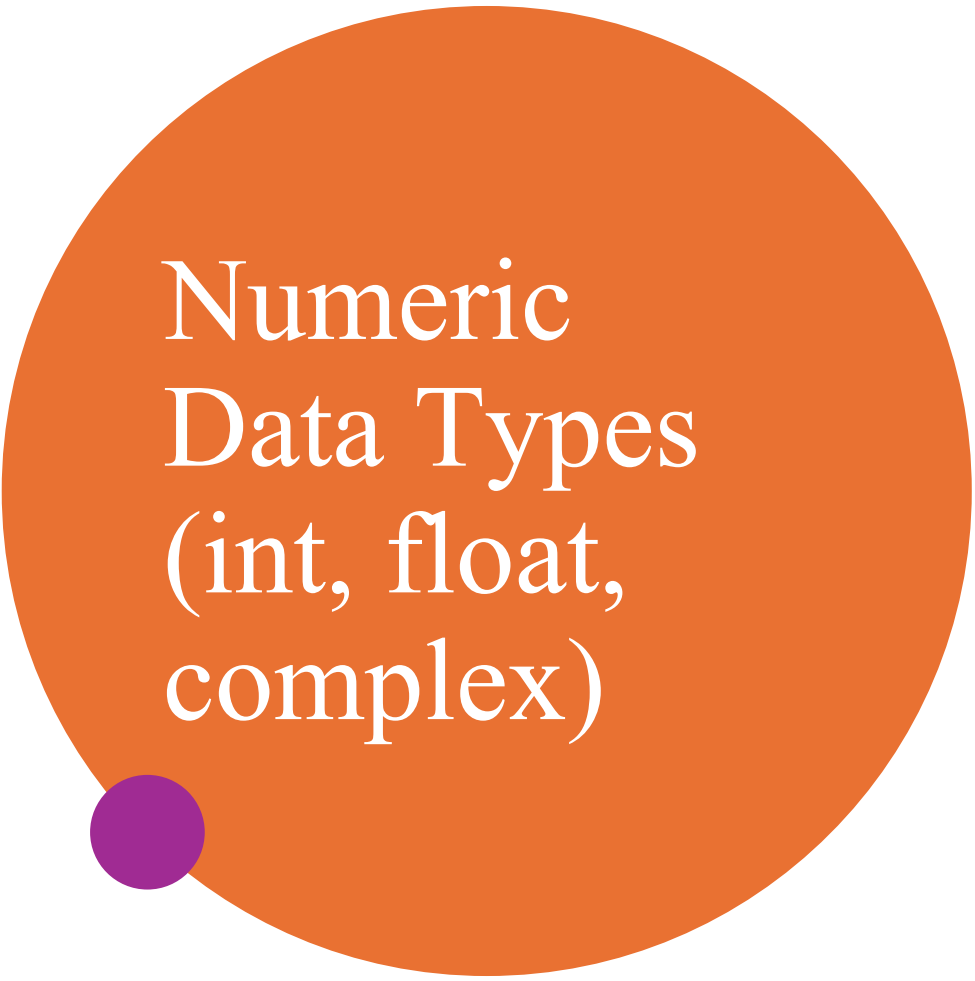


Multiple assignments in
a single line



Data types

- Memory Limit
 - Possible Values
 - `sizeof(x)`
- 




Numeric Data Types (int, float, complex)

- Integers (int,long)
- Floating-point numbers (float,double)
- Basic arithmetic operations on numeric types
- Converting between numeric types



Text Data Type (str)

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- Characters
 - Strings (str)
 - Creating and manipulating strings
 - String concatenation and formatting
 - Common string methods (length(), etc.)

Basic Input/Output Operations



Using the cout function for output



Getting user input with cin



Formatting output strings



Boolean Data Type (bool)

- Booleans (bool)
- Understanding True and False values
- Boolean operations (and, or, not)
- Comparison operators in C++
- Practical uses of boolean data types



Arithmetic Operations

- Arithmetic Operations
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