


**Introduction to
Programming Using**




With
Mohammed Abu-Hadhoud
MBA, PMOC, PgMP®, PMP®, PMI-RMP®, CM, ITIL®, MCPD, MCSO


26+
Years of Experience

Understand

Data Types

Data Type Sizes/Ranges?





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Data Types in C++

Different types of variables (defined with different keywords)

1
Fundamentals


Integral Type	int	Whole Number : 712
	char	Single Character : 'A'
Floating Type	float	Floating Point : 14.5
	double	Floating Point : 14.5
Boolean Type	bool	True or False
String Type	string	Text : "Mohammed"
Void Type	void	Empty
Wide Character	wchar_t	Unicode


2
Derived

- Function
- Array
- Pointer
- Reference

3
User-Defined

- Class
- Structure
- Union
- Enum
- Type Def





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Ranges & Sizes				
Type	Meaning	Range		Size (Bytes)
int	Integer	-2,147,483,648	+2,147,483,647	4
float	Floating-Point	1.17549e-38	3.40282e+38	4
double	Double Floating-Point	2.22507e-308	1.79769e+308	8
char	Character	-127	127	1
wchar_t	Wide Character			2
bool	Boolean	0	1	1
void	Empty			0
string	String			12



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Understand

Type Modifiers

what are type modifiers?



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Type Modifiers:

We can modify some of the fundamental data types by using type modifiers. There are 4 type modifiers in C++. They are:

1. signed
2. unsigned
3. short
4. long



Type Modifiers:

We can modify the following data types with the above modifiers:

1. int
2. double
3. char





Ranges & Sizes				
Type	Sign	Range		Size
short int short	signed	-32,768	+32,767	2bytes
	unsigned	0	65,536	2bytes
int	signed	-2,147,483,648	+2,147,483,647	4 bytes
	unsigned	0	4,294,967,295	4 bytes
long int long	signed	-2,147,483,648	+2,147,483,647	4 bytes
	unsigned	0	4,294,967,295	4 bytes
long long int long long	signed	-(2^63)	(2^63)-1	8 bytes
	unsigned	0	18,446,744,073,709,551,615	8 bytes



Ranges & Sizes				
Type	Sign	Range		Size
float	signed	1.17549e-38	3.40282e+38	4 bytes
double	signed	2.22507e-308	1.79769e+308	8 bytes
long double	signed	10 e-307	10 e+308	12 bytes



