Memory Allocation of Variables and Functions in C/C++

Category	Type / Keyword	Example	Memory Segment	Size (bytes)	Scope	Lifetime
Primitive Data Types	int	int a;	Stack / Data	4	Block / Global	Auto / Static
	char	char c;	Stack / Data	1	Block / Global	Auto / Static
	float	float f;	Stack / Data	4	Block / Global	Auto / Static
	double	double d;	Stack / Data	8	Block / Global	Auto / Static
	bool (C++)	bool flag;	Stack / Data	1	Block / Global	Auto / Static
Derived Data Types	array	int arr[10];	Stack / Data	40	Block / Global	Auto / Static
	pointer	int *ptr;	Stack / Heap	8	Block / Global	Auto / Static
	struct	struct S { int x; } obj;	Stack / Data	Depends	Block / Global	Auto / Static
	union	union U { int x; float y; } u;	Stack / Data	Largest Member	Block / Global	Auto / Static
Storage Classes	auto	auto int x;	Stack	4	Block	Automatic
	register	register int x;	CPU Register	N/A	Block	Automatic
	static	static int x;	Data	4	Block	Entire program
	extern	extern int x;	Data	4	File / Global	Entire program
Dynamic Memory Allocation	malloc	int *p = malloc(4);	Heap	4 (or more)	Manual	Until freed
	calloc	int *p = calloc(4, sizeof(int));	Heap	16	Manual	Until freed
	new (C++)	int *p = new int;	Heap	4	Manual	Until delete
Functions	void func()	void foo();	Code Segment	Depends	File / Global	Entire program
	inline (C++)	inline int foo() {}	Code Segment	Depends	File	Entire program
Object-Oriented (C++)	class	class A { int x; };	Stack / Heap	Depends	Block / Global	Auto / Static
	virtual	virtual void f();	V-Table (Heap/Code)	Extra 8 bytes	File / Global	Entire program