Differences Between Array and Vector

Feature	Array	Vector
Size	Fixed size, cannot be modified after creation	Dynamic size, can grow or shrink as needed
Memory Allocation	Contiguous memory allocation	Dynamic memory allocation with extra space for growth
Speed	Faster access and operations	Slightly slower due to dynamic allocation
Memory Efficiency	More memory efficient	Less memory efficient due to extra capacity
Built-in Methods	No built-in methods	Many built-in methods (push_back, pop_back, etc.)
Flexibility	Less flexible due to fixed size	More flexible with dynamic sizing
Memory Management	Manual memory management	Automatic memory management
Bounds Checking	No built-in bounds checking	Safe array bounds checking
Element Insertion/Deletion	Requires manual shifting of elements	Handled automatically by vector
Cache Performance	Better cache performance due to locality	May have lower cache performance due to dynamic nature