**Program A**

**Description:**

The program utilizes several vector functions referring to vectors already given in the document. Assistance was taken from cplusplus.com in order to learn how to utilize these functions and how to properly implement them. Throughout the program, only the first and fifth vectors are used, and the contents of the vectors change as more functions are implemented.

**Output Example:**

The contents of fifth are: 16 2 77 29  
1) assign function - assigns or replaces current elements in a vector (first): 50 50 50 50 50  
2) at function - refers to an element at a specific location (fifth): 77  
3) back function - refers to the last element in a vector (fifth): 29  
4) capacity function - returns size currently allocated for the vector (fifth): 4  
5) clear function - clears all of the elements from a vector (first).  
6) empty function - checks if a vector is empty (first): The vector is empty.  
7) erase function - removes a specific elements or a range of elements (fifth): 16 2 29  
8) front function - refers to the first element in a vector (fifth): 16  
9) insert function - inserts an element at a specified position (fifth): 16 5 2 29  
10) size function - returns the number of elements (fifth): 4  
11) max\_size function - returns the max possible size of a vector (fifth): 4611686018427387903  
12) operator = - standard equals procedure including replacing and modifying current contents.  
first = fifth, so now the contents of first are (first): 16 5 2 29  
13) operator [] - refers to an element at a specific position similar to the at() function  
However it does not throw an out-of-bounds error (first): 16  
14) pop\_back function - removes the last element (first): 16 5 2  
15) push\_back function - inserts a new element at the end of the vector (first): 16 5 2 6