

## SIT102 – Introduction to Programming

### Answers for 6.1P Working with Arrays and Vectors

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Question 1: Explain how arrays allow you to easily work with multiple values, compared to using variables.

With arrays, you can store multiple values in one variable and you can access each value using its corresponding index when required. This is better than working with multiple variables that store only one value.

Question 2: Explain the relationship between the length and valid indexes of an array.

The array size must always be one more than the number of the final index in an array. The minimum index must also be 0.

Question 3: Explain how for loops can be used to work effectively with elements in a static array.

You can encapsulate instructions that you wish to perform on one element inside a for loop. This way, the computer will perform those instructions on each element in an array until they have been carried out on all elements.

Question 4: How could you print out the names in a static array starting with the last name and working back to the first name? Show with a programming example.

```
for (int i = names.size(); i >= 0; i--)  
{  
    write_line(names[i]);  
}
```

Question 5: What is the main difference between a standard static array and a dynamic array?

Static arrays cannot have elements added or removed. They have a fixed size while dynamic arrays can be resized and elements can be added and removed as needed.

Question 6: How are elements added to a vector in C++? Give a programming example.

```
names.push_back(read_string("Enter a name:"));
```

Question 7: How can you remove an element from a vector in C++? Give a programming example.

```
names.pop_back()
```

Question 8: Why pass a vector by reference?

It is better to pass a vector by reference so that extra copies of the array are not made in memory when used in functions.