Q1:

Pass by value will copy the data to a new location and keep the original one intact.

Pros: Keep the data in main function secure, code style easy to read and understand

Cons: If the data set is large, it can be very memory consuming and slow, it is not suitable if you want to change the local data by executing your function

Usually used for small projects and want to keep the data intact during runtime.

Pass by reference will pass the memory location of the variable to the function and the refence cannot be NULL, the modification of the data in the function will change the original data

Pros: Very fast since only passing the reference of the data not data itself, provide ways to modify the original value in your function

Cons: Might cause bugs or destroy the original data if not pay enough attention during the programming.

Usually used in the situation that an argument is required, since it cannot be null, many bugs and checking process can be avoided.

Pass by pointer will pass a pointer to the variable, the pointer can be NULL, the modification of the data in the function will change the original data.

Pros: Same as the passing by reference, very fast since only passing a pointer to the data, not passing data itself, provide ways to modify the original value in your function during runtime.

Cons: Might cause bugs or destroy the original data if not pay enough attention during the programming. Dereferencing a NULL pointer or an uninitialized pointer may cause undefined behavior

Usually used in the situation that an argument is optional and can be NULL.

Pass by const references is basically same as pass by references, except the references are constant and cannot be changed, it is a good alternative of pass by value since it both has high efficiency and avoids making any changes to the original object.

Pros: Very fast since only passing the reference of the data not data itself, protect the original data from any possible changes.

Cons: It is not suitable if you want to change the local data by executing your function

Usually used to situations that have large data and wish to keep the original data intact.

Q2:

O(n^2)

Q3:

Empty() O(1)

Size() O(n)

Push\_back O(n)

Push\_front O(1)

Insert\_after O(1)

Erase() O(n)

POP-back O(n)

POP-front O(1)

Back O(n)

Front O(1)

Print O(n)

Q4:

O(n)

Q5:

O(n)

Q6:

O(n)

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vector: 1 4 5 23 100 12 18 175

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

1

Output: 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

vector: 1 4 5 23 100 12 18 175

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Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

2

Output: 175

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

vector: 1 4 5 23 100 12 18 175

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Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

3

Output: 175

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

vector: 1 4 5 23 100 12 18 175

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

1

Output: 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

vector: 1 4 5 23 100 12 18 175

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Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

3

Output: 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

vector: 1 4 5 23 100 12 18 175

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Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

4

Value of current position is: 1

Enter the value of i::

2

Output: 5

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vector: 1 4 5 23 100 12 18 175

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Please choose any of the following options:

1. What is the first element?

2. What is the last elemt?

3. What is the current element?

4. What is the ith element from the current location?

5. Exit.

5

Exit