1. (Weight: 20%) What does the following code fragment do?

```
vector<double> my_vector;
my_vector.push_back(3.456);
my_vector.push_back(5);
double result = my_vector[1] + my_vector[0];
cout << "Result is " << result;
```

2. (Weight: 15%) What is the difference between a shallow copy and a deep copy?

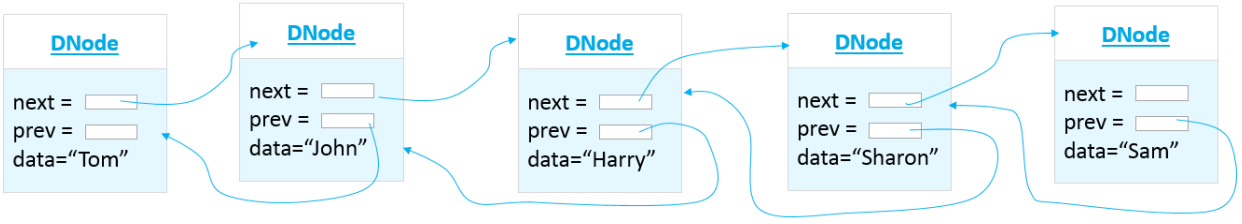
3. (Weight: 20%) Answer the following questions about lists.

a. Each node in a single-linked list has a pointer to _____.
b. In a double-linked list each node has a pointer to_____, and _____.
c. To remove an item from a single-linked list you need a pointer to_____.
d. To remove an item from a double-linked list you need a pointer to _____.

4. (Weight: 20%) For the double-linked list in the figure below, explain the effect of each statement in the following fragments.

a.
```
DNode* node_ptr = tail->prev;
node_ptr->prev->next = tail;
tail->prev = node_ptr->prev;
```

b.
```
DNode* node_ptr = head;
head = new DNode("Tamika");
head->next = node_ptr;
node_ptr->prev = head;
```



5. (Weight: 25%) PROGRAMMING - Using the single-linked list shown in the figure below, and assuming that head references the first Node and tail references the last Node, write statements to do each of the following.

a. Insert "Bill" before "Tom" (You have a reference to the head (Tom)).

b. Insert "Sue" before "Sam" (You only have a reference to Sam and the head).

c. Remove "Bill".

d. Remove "Sam" (You only have a reference to the head and Sam).