

1. Static Array vs. Dynamic Array
 - a. How to create? Use new operator to create dynamic array.
 - b. How to destroy? Can not destroy Static arrays; use delete to destroy dynamic arrays
2. Memory management.
 - a. Use new and delete operators as a pair
 - b. Can only delete pointers? Why?
 - c. In C language malloc() and free() as a pair
 - d. How to use destructor?

Destructor Need

- Dynamically-allocated variables
 - Do not go away until "deleted"
- If pointers are only private member data
 - They dynamically allocate "real" data
- In constructor
 - Must have means to "deallocate" when object is destroyed
- Answer: destructor!
- Opposite of constructor
 - Automatically called when object is out-of-scope
 - Default version only removes ordinary variables, not dynamic variables
- Defined like constructor, just add ~
 - MyClass::~~MyClass()

```

{
    //Perform delete clean-up duties
}
      
```

3. Two member variables to manage the dynamic patientArray in the Doctor class.
Which two variables? Array Size (or Capacity); the number of patients
For example:

```

class Doctor {
private:
    string doctorName;
    stringPtr_t patientArray;
    ushort_t patientArraySize;
    ushort_t numOfPatient;
public:
    Doctor(); //Default doctorName="need a name"  patientArraySize = 100

```

```

        Doctor(ushort_t patientArrayCapacity); //specify patientArraySize
        ...
    }

```

4. Manage the dynamic array for a patient list

Two tasks: (1) Allocate memory resource for the dynamic array (create).

(2) Add a patient information (i.e., name) into the array.

Should we use one function to implement both tasks?

No. Two functions.

5. Design member function addPatient() or inputPatient()

Option 1: user interface + add patient

```

//asks user to input public variables
void askUserInput();

```

Option 2: just add patient. User interface is implement somewhere else.

For example:

```

//Add a patient. Please check that patientArray is not Full.
//Return: true - successfully add a patient
//         false - this is a failure
bool addPatient(string patientName);

```