Lecture 2 - C++ Review

Tuesday, January 15, 2019 12:01 PM

This week:

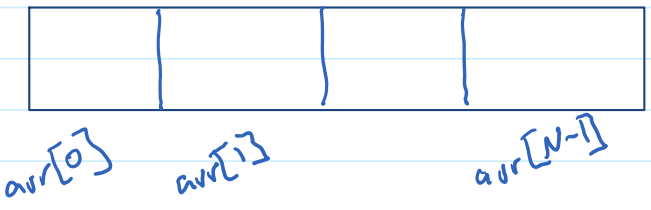
- Recitation 1 due

Today

- Arrays
- Structs
- Array of structs
- File I/O

Arrays

A contiguous set of memory locations reserved by program to store N elements of particular type of data.



Declaration:

```
int arr[4]; // allocates memory
            for 4 elements of
            int type
```

Usage:

```
arr[0] = 2270;
```

```
arr[1] = 1.9; // what happens?
                // 1 is recorded
```

As function arguments:

```
void foo(int arr[], int size)
{
    arr[0] = 12;

    size = 6;
}
```

specifies reference to 1st element

pass-by value

Structs

A C++ struct allows us to store multiple variables in a single entity. It is a way to organize data.

E.g. Create a struct to store veterinary patient info: name, species, sex, age, weight

```
struct AnimalPatient
{
    string name;
    string species;
    int age;
    double weight;
    bool sex;
};
```

};

Structs Usage

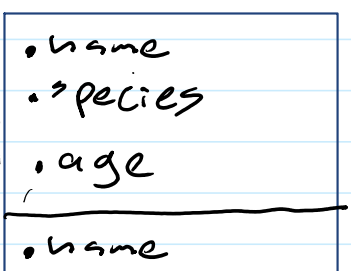
Once a custom struct is defined, declaration is needed in order to use:

e.g.

```
int main(){
    AnimalPatient p0;
    p0.name = "Steve";
    p0.species = "cat";
    p0.age = 4;
    :
    return 0;
}
```

Array of Structs

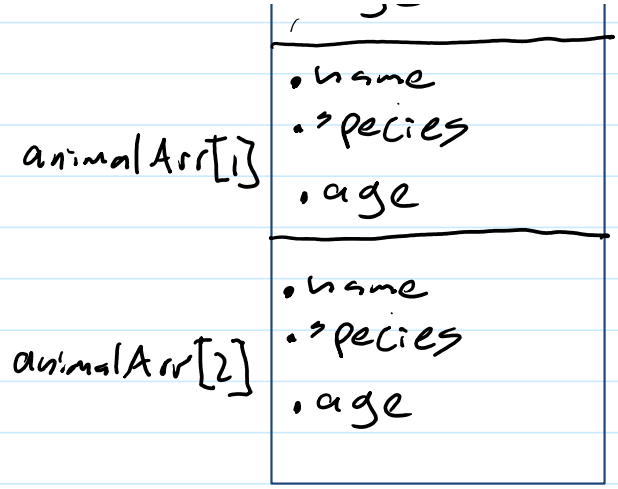
```
AnimalPatient animalArr[3]; // store info
                            // for 3 patients
animalArr[0].name = "Bean";
animalArr[1].name = "Steve";
animalArr[0].age = 4;
```



animalArr[0].age = 1;

Absolute Ctt

Savitch



File Input

How to read in external data?

1) use the <fstream> library

2) Declare a stream object

```
ifstream inStream;
```

3) "connect" stream object to external file

```
inStream.open("someFile");
```

4) Read in data until a delimiter is reached:

```
int x,y;

inStream >> x; // default delimiter is white space
inStream >> y;
```

Repeat step 4 as many times as needed.

Custom delimiter

use getline() function

```
loop
{   string arr[10];
    getline(inStream, arr[0], ',');
    getline(inStream, arr[1], ',');
    getline(inStream, arr[2], '\n');
}end
```

↑ custom delimiter