CS 161
Intro to CS I

1-d Arrays (Static vs. Dynamic)
Odds and Ends

• Last day to demo Assignment 3
• Assignment 4 due Sunday
Create 1-D Array

int student_grades[5];

• How do you access each item?
• What does the array name represent?
• Why is the array name the address of 1st element?
• What are the initial values?
Initialize/Assign Values

• Declaration
  
  ```c
  int student_grades[5] = {0, 0, 0, 0, 0};
  ```

• Individual Elements
  
  ```c
  student_grades[0]=0;
  ...
  student_grades[4]=0;
  ```

• Why is this incorrect?
  
  ```c
  student_grades={0, 0, 0, 0, 0};
  ```
Initialize/Assign Values...

• Using a Loop
  
  While Loop Example:
  
i=0;
  while (i<5) {
    student_grades[i]=0;
    i++;
  }

  For Loop Example:
  
  for(i=0; i<5; i++)
    student_grades[i]=0;

• Which is better to use with arrays and why?
Read/Print 1-D Array Values

• Read Values From User
  
  for(i=0; i<5; i++) {
      cout << "Enter final grade for student: ";
      cin >> student_grades[i];
  }

• Print Values
  
  for (i=0; i<5; i++) {
      cout << "Student\'s final grade is " << student_grades[i] << endl;
  }
Static vs. Dynamic 1-D arrays...
How does creating and freeing memory work?

```cpp
int *p, *q;
p=new int;
q=new int[5];
delete p;
delete [] q;
```
```cpp
#include <iostream>

using namespace std;

int main() {
    int stack_array[10];
    int heap_array = new int[10];

    //how do I initialize the elements in array

    //how do I print the address of the pointer to the array

    //what is the contents of the pointer, how do I print it

    //how do I print the address of where the array begins in memory

    //how do I print the contents of the first element in the array

    return 0;
}
```