

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**

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

- **Individual Elements**

```
student_grades[0]=0;
```

...

```
student_grades[4]=0;
```

- **Why is this incorrect?**

```
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

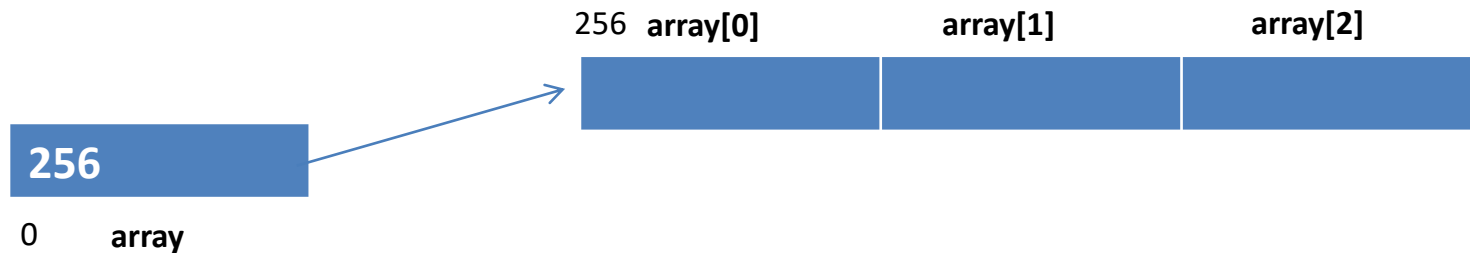
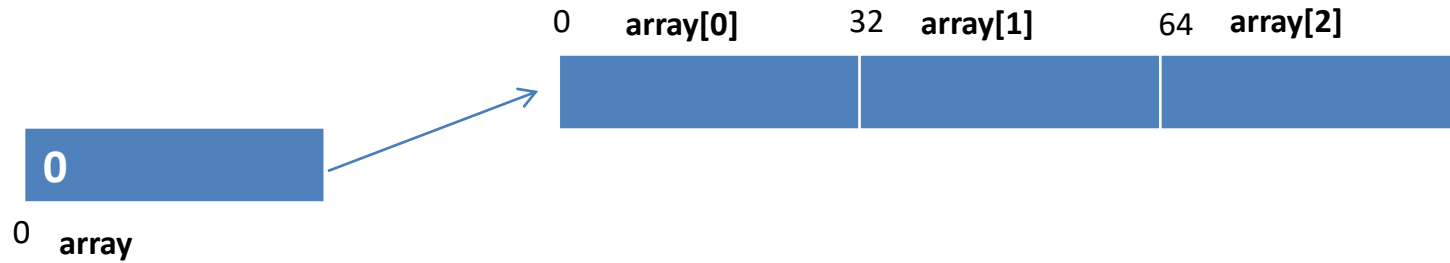
- Read Values From User

```
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?

```
int *p, *q;
```

```
p=new int;
```

```
q=new int[5];
```

```
delete p;
```

```
delete [] q;
```



```
1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6     int stack_array[10];
7     int heap_array=new int[10];
8
9     //how do I initialize the elements in array
10
11
12     //how do I print the address of the pointer to the array
13
14
15     //what is the contents of the pointer, how do I print it
16
17
18     //how do I print the address of where the array begins in memory
19
20
21     //how do I print the contents of the first element in the array
22
23
24     return 0;
25 }
```