EECE.2160: ECE Application Programming

Spring 2017

Lecture 30: Key Questions April 10, 2017

1. (Review) Explain the dynamic allocation functions malloc(), calloc(), realloc(), and free().

2. **Example:** What does the following program print?

```
void main() {
  int *arr;
  int n, i;
  n = 7;
  arr = (int *)calloc(n, sizeof(int));
  for (i = 0; i < n; i++)
    printf("%d ", arr[i]);
  printf("\n");
  n = 3;
  arr = (int *)realloc(arr, n * sizeof(int));
  for (i = 0; i < n; i++) {
    arr[i] = i * i;
    printf("%d ", arr[i]);
  }
  n = 6;
  arr = (int *)realloc(arr, n * sizeof(int));
  for (i = 0; i < n; i++) {
    arr[i] = 10 - i;
    printf("%d ", arr[i]);
  }
  free(arr);
}
```

3. What are the common pitfalls of dynamic memory allocation?

4. Explain the use of general data structures and pointer-based data structures in particular.