Operating Systems
Spring SEMESTER 2020

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L-06 Student Background Assessment:

Questions 1-4 C202   Questions 5-10 C335

1. What are the advantages of linked lists over array-based data structures?

- Link Lists are more efficient for quickly adding an undefined amount of elements to a structure, but when it comes to finding those elements it is a slow process. When it comes to Arrays the disadvantage is that they are hardcoded with a predefined amount of space allocated to the structure and thus a limit exists, However finding elements in an array structure is easier because they can be hashed.

2. Discuss the differences between classes and structures.

- **Structures**
  - Ordered
  - Do not support inheritance
- **Classes**
  - Have functions
  - Inherit attributes
  - Produce subclasses

3. What are the advantages and disadvantages of global variables?

- Global Variables
    - Advantages
        - Allow easy refactoring (simply changing variables)
        - Allow fewer lines of code for declarations
    - Disadvantages
        - Increase Complexity
        - Cause variable scope issues if precautions are not taken
        - Shared values cause logic errors

4. Write an example of a recursive function:

- Public static int sumOfDigits(int number){

    if(number < 10)

    return number;

    else{

    return(number %10) + sunOfDigits(number / 10);

    }

    }

5. How do you declare arrays (or build them)?

- **Remembering the data is contiguous and the same size
- ; Array of ten 32 bit Integers
- Arwd4: resd 10
- To build them you need to add the address with an offset value and build member values into them

6. How would you implement {x = x + 1} in that language?

- Add $s0 , $s0 , $s1

7. How do you call a function in assembler?

- Assembly requires that registers are used for variables in functions
- Storing values in registers before function calls
- "Assembly Code example"
- Call rX L : L represents the Line number for the functions starting point a r s any register from r1-r15
- Returns are known as jumpr rX : this will return the value at that register which the call was made.

8. What is the largest program you have written in assembler (lines of code)?

- From C335, I have writen Programs in the 80-90 Line range.

9. Did you do programming from within an IDE or on the command line?

- I have written programs in both the commandline and with Jetbrains IDEAs