

CS270 - System Software
Quiz #1 - Fall 2016

Name _____

1. Below are the contents of two separate files containing C source code. For each labelled C statement, specify whether it is a (1) declaration, (2) definition, or (3) initialization. If it is more than one of these, list all that apply. (You can use the numbers listed if you want)

```
#include <stdio.h>

void sumave(int, int[]); /* ----- */ DECLARATION

int sum, ave;           /* ----- */ DEFINITION

void main()
{
    int i = 0;          /* ----- */ DEFINITION, INITIALIZATION

    int arr[10];         /* ----- */ DEFINITION

    for (i = 0; i < 10; i++)
        scanf("%d", &arr[i]);

    sumave(10, arr);

    printf("Sum = %d, ave = %d\n", sum, ave);
}
```

```
extern int sum, ave;           /* ----- */ DECLARATION

void sumave(int n, int arr[]) /* ----- */ DEFINITION
{
    int i;                /* ----- */ DEFINITION

    sum = 0;
    for(i = 0; i < n; i++)
        sum += arr[i];
    ave = sum/n;
}
```

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Quiz #2 - Fall 2016

Name _____

1. An ELF file contains several *sections*. Briefly describe what each section listed below contains:

- .text

CODE

- .bss

UNINITIALIZED GLOBAL DATA

- .rodata

READ-ONLY DATA

- .data

INITIALIZED GLOBAL DATA

2. Local variable names do not show up in the ELF symbol table - why not?

THEY ARE ALLOCATED ON THE STACK, RATHER THAN IN
"REGULAR" MEMORY

3. Assume that a C source file contains a main and the two functions that are called by main. What must the linker (ld) do to turn the relocatable ELF file into an executable file?

1. ADD START UP CODE

2. DETERMINE MEMORY LOCATIONS FOR ALL CODE, DATA, ETC

3. FILL IN ADDRESSES FOR ALL MEMORY REFERENCES

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Quiz #3 - Fall 2016

Name: _____

1. (10 pts) Write a PERL program that will determine the largest and smallest values of the numbers listed on the command line.

#! /bin/perl

\$maxval = @_[0];
\$minval = @_[0]

foreach \$val (@_)

{

\$maxval = \$val if \$val > \$maxval;
\$minval = \$val if \$val < \$minval;

}

print "maxval is " . \$maxval . "minval is " . \$minval;