CS 449 – Midterm 2 Practice Problems

1.) For the program below, what will the stack look like if execution is paused at the line marked HERE? (You may ignore padding and alignment.)

```c
int g(char *a) {
    //HERE
    return strlen(a);
}


int main()
{
    int y;
    y = g("hello");
    return 0;
}
```

2.) Answer the following about a memory region of 20 MB that has a chunk size of 1MB that is managed with a linked list using best fit allocation.

        a.) Assume the region is initially empty. Show the list after allocations of size 4, 6, 3, and 2 (in that order).

        b.) From the list in part (a), free the 6 and 3 MB chunks. What is the resulting linked list?

        c.) Finally, a request for a chunk of size 4 occurs. Show the linked list from part (b) with the new allocation.

3.) Assume the following structure definition:

```
struct person {
    int age;
    char name[100];
};
```

    a.) Write a function called compare_person that you could pass to qsort as a comparator, which arranges the people by decreasing age, with ties sorted in alphabetical order.

    b.) Write the call to qsort that would sort the array: struct person people[20];

4.) Write a macro that finds the minimum of its three arguments.