

Homework 7

Problem 1

Read the following codes and fill the given table.

```
char ch = 'y';
short num[5];
void foo(int x){
    static int i = 7;
    int j = x+1;
}
```

Indicate the location of the following symbols, e.g. .data, .bss, .text, or stack.

Symbol	Location
ch	
num	
foo	
i	
j	

Problem 2

Suppose we have main.c and a shared object dog.so, so in main.c we want to invoke a function void eat() in dog.so.

Now, please complete the following code in main.c using the dynamic linking interfaces.

```
#include <stdio.h>
#include <stdlib.h>
#include <dlfcn.h>
int main(void)
{
    //Your codes here.
    eat();
    return 0;
}
```

Problem 3

<pre>/*file: a.c*/ extern int bae(void); static int x= 1; int *xp = &x; void foo2(void); void *foop = &foo2; void foo1(int f){ }; void foo2(void){ foo1(bar() + (int)foop + *xp); }</pre>	<p>a.o: file format elf32-i386</p> <p>Disassembly of section .text:</p> <p>00000000 <foo1>:</p> <p>0: 55 push %ebp 1: 89 e5 mov %esp,%ebp 3: 90 nop 4: 5d pop %ebp 5: c3 ret</p> <p>00000006 <foo2>:</p> <p>6: 55 push %ebp 7: 89 e5 mov %esp,%ebp 9: 83 ec 08 sub \$0x8,%esp c: <u>e8 fc ff ff</u> call d <foo2+0x7> 11: 89 c2 mov %eax,%edx 13: a1 00 00 00 00 mov 0x0,%eax 18: 01 c2 add %eax,%edx 1a: a1 00 00 00 00 mov 0x0,%eax 1f: 8b 00 mov (%eax),%eax 21: 01 d0 add %edx,%eax 23: 83 ec 0c sub \$0xc,%esp 26: 50 push %eax 27: e8 fc ff ff call 28 <foo2+0x22> 2c: 83 c4 10 add \$0x10,%esp 2f: 90 nop 30: c9 leave 31: c3 ret</p>
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If **bar** is relocated to **0x0804840d** and **foo2** is relocated to **0x080483e1**, what will the underlined instruction be changed to after linking?