Homework9

Homework9

8049600 → 601 → 606 → 60C
(602) (608)

- 题目1

```
struct data {
        char a;
        short b[2];
        char* c;
        union{
                char x;
                short y;
                int z;
        }p;
        char d;
};
struct data d[2];
```

→ 610 → 611

1
2×2=4
4

17

4

→

(614)

- Suppose the address of global variable dis 0x8049600, please answer the following questions.

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- 题目1

Variable	Start address
d[0]	0x8049600
d[1]	[1] 0x8049614
d[0].a	[2] 0x8049600
d[0].b[1]	[3] 0x8049604
d[0].c	[4] 0x8049608
d[0].p.y	[5] 0x804960c
d[0].p.z	[6] 0x804960c
d[0].d	[7] 0x8049610

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- 题目2
  - What's the output of the following C program? (on a 32-bit machine)

```
int main() {
        static char char_table[3][13] = {
                { 'd', 'o', 32, 'y', 'o', 'u', 32, 'w', 'a', 'n', 't', 32, 'a' }, { 32, 109, 105,
                100, 116, 101, 114, 109, 32, 101, 120, 97, 109 }, {0 }
        };
        static char ans[] = "abcdefghijklmnopqrstuvwxyyz";
        printf("%s?\n", char_table);
        printf("%c%c%c!\n",
                (char)(((char **)ans)[6]),
                (char)(((char *)ans)[4]),
                (char)(ans[18]));
        return 0;
}
```

输出：do you want a midterm exam?
yes!

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- 题目3
  - For each of the following structure declarations, determine the offset of each field, the total size of the structure, and its alignment requirement under x86-64.
  - A. struct P1 { int I; char c; long j; char d;};
  - B. struct P2 { long I; char c; char d; int j;};
  - C. struct P3 { short w[3]; char c*[3]};
  - D. struct P4 { struct P1 a[2]; struct P2 *p};
  - E. struct P5 { short w[3]; char c[3]}.

64位

long 4bytes

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- 题目3

	Offset of each field				Total size	Alignment
A	i:0	c:4	j:8	d:12	13	16
B	i:0	c:4	d:5	j:8	12	12
C	w:0	c:8			32	32
D	a:0	p:32			40	40
E	w:0	c:6			9	10

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- 题目4
  - Suppose we have the following function ‘login’ to perform login process.

```
int login() {
        char username[8];
        char password[8];
        gets(username);
        gets(password);
        return check_match_in_database(username, password);
}
```

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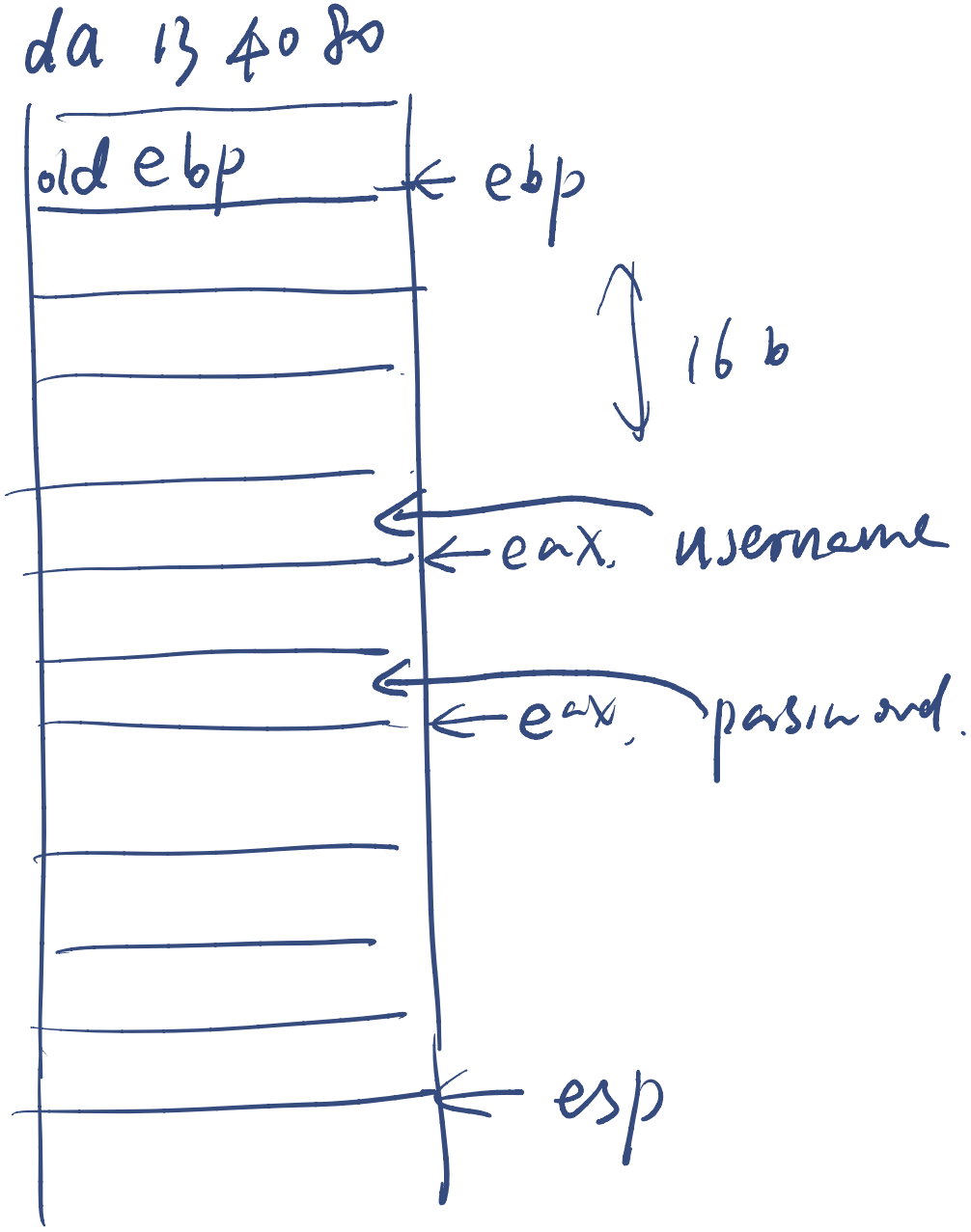
- 题目4
  - Here is a part of the function's assembly.

```
Pushl %ebp
movl %esp, %ebp
subl $40, %esp
leal -16(%ebp), %eax
movl %eax, (%esp)
call _gets
leal -24(%ebp), %eax
movl %eax, (%esp)
call _gets
.....
```



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- 题目4
  - In the normal process, if the username and the password are both ok, the function ‘login_ok’ will be called to indicate login success. We’ve already known that the address of ‘login_ok’ is 0x804013da. Can you construct an input to make the function ‘login_ok’ be called after ‘login’ returns? You need to specify the key bytes and their positions rather than the complete input. And give one brief explanation about your input.