Homework 9

Problem 1

Assume we want to write a tick program which prints a "BEEP" in console every second. If there is any client connected, the BEEP will be sent to client instead of being printed on server. When client closes the connection, "BEEP" should be printed in console again. Here is parts of the program:

```
1. #include <sys/types.h>
2. #include <sys/socket.h>
3. #include <errno.h>
4. #include <fcntl.h>
5. #include <signal.h>
6. #include <unistd.h>
7. #include <stdlib.h>
8. #include "csapp.h"
9.
10. void handler (int sig) {
11.     Write(1, "BEEP\n", 5);
12.     Alarm(1);
13. }
14.
15. // This function will block and return after the client
16. // close the connection
17. void wait_disconnect (int fd) {
18.     char c;
19.     while (read(fd, &c, 1) > 0 || errno == EINTR) ;
20.}
21.
22.int main(void) {
23.     int listenfd, connfd;
24.     Close(2); // You are not allowed to use stderr
25.     Signal(SIGALRM, handler);
```

```
26.     Alarm(1);
27.     listenfd = Open_listenfd(1234);
28.     while (1) {
29.         connfd = Accept(listenfd, NULL, NULL);
30.         /* Your code here */
31.     }
32.     exit(0);
33.}
```

1. Complete the program.
2. Please write a command to test your program, without writing any client program.

Problem 2

Extend TINY to support the HTTP HEAD method and check the correctness.

Problem 3

11.3.2 (textbook) shows examples of **multiple domain names mapped to the same IP address**, and also **a domain name mapped to multiple IP addresses**.

1. Think about the benefits of mapping a domain names to multiple IP addresses.

2. In shared web hosting case, many websites can reside on one web server (sharing a single IP address) connected to the Internet. How does this server decide which website to show the user?