```
1
2  #include <fcntl.h>
3  #include <getopt.h>
4  #include <unistd.h>
5  #include <stdio.h>
6  #include <stdlib.h>
7  #include <errno.h>
8  #include <string.h>
9
10 int main(int argc, char* argv[]){
11       int BUFFSIZE = 4069;
12       char buf[BUFFSIZE];
13       char* outfilename = "default_outfile";
14       int out,write1,read1;
15       while((out=getopt(argc,argv,"o:")) != -1){
16             switch(out){
17                   case 'o':
18                         outfilename = optarg;
19                         break;
20             }
21
22       }
23       int fdout;
24       if(outfilename == "default_outfile" ){
25             fdout = 0;
26       }else{
27             fdout = open(outfilename,O_RDWR|O_TRUNC|O_CREAT,0666);
28             if(fdout < 0){
29                   fprintf(stderr,"something wrong happened(position:
   open the output file): %s \n", strerror(errno));
30                   exit(-1);
31             }
32       }
33       read1 = 0;
34       write1 = 0;
35       if(optind == argc){
36             int readSTDinput, outSTDoutput;
37             while((readSTDinput = read(1,buf,4069)) != 0){
38                   if(readSTDinput == -1){
39                         fprintf(stderr,"something wrong happened
   (position: STDinput): %s \n", strerror(errno));
40                         exit(-1);
41                   }
42                   outSTDoutput = write(fdout,buf,readSTDinput);
43                   write1++;
44                   if(outSTDoutput == -1){
45                         fprintf(stderr,"something wrong happened
   (position: STDoutput): %s \n", strerror(errno));
46                         exit(-1);
47                   }
48                   read1++;
49
50             }
51             fprintf(stderr,"(warning: no input file, only STDinput)the
   number of bytes transfered is : %d \n",outSTDoutput);
```

```
52              exit(0);
53        }
54        int i;
55        int sum = 0;
56        for(i = optind;i < argc;i++){
57              int fd, readSTDinput, outSTDoutput;
58              char *ptr_hypen = "-";
59              int counter = 0;
60              int strcmpRes = strcmp(argv[i],ptr_hypen);
61              if(strcmpRes == 0){
62                          printf("read from STDinput");
63                          while((readSTDinput = read(1,buf,4069)) != 0){
64                          if(readSTDinput == -1){
65                                fprintf(stderr,"something wrong happened
    (position: STDinput): %s \n", strerror(errno));
66                                exit(-1);
67                          }
68                          outSTDoutput = write(fdout,buf,readSTDinput);
69                          if(outSTDoutput == -1){
70                                fprintf(stderr,"something wrong happened
    (position: STDoutput): %s \n", strerror(errno));
71                                exit(-1);
72                          }
73                          sum += outSTDoutput;
74                          read1++;
75                          write1++;
76                    }
77                    continue;
78              }
79              fd = open(argv[i],O_RDONLY);
80              if(fd < 0){
81                    fprintf(stderr,"input file error, cannot open->
    (position: %s): %s \n",argv[i],strerror(errno));
82                    exit(-1);
83              }
84              int isend = -1;
85              int isBinary = -1;
86              while(isend != 0){
87                    int bytesRead = read(fd,buf,BUFFSIZE);
88                    read1++;
89                    if(bytesRead == -1){
90                          fprintf(stderr,"input file read, cannot read->
    (position: %s): %s \n",argv[i] ,strerror(errno));
91                          exit(-1);
92                    }
93                    if(bytesRead == 0){
94                          isend = 0;
95                    }
96                    int j = 0;
97                    for(j = 0; j < bytesRead ; j++){
98                          if(!(isprint(buf[j])||isspace(buf[j]))){
99
100                               isBinary = 1;
101                               continue;
102                         }
```

```
103                     }
104
105                     if(isBinary != -1 && counter == 0){
106                           fprintf(stderr,"u got a binary file. the
    filename is: %s \n",argv[i]);
107                           counter++;
108
109                     }
110                     int wd = write(fdout,buf,bytesRead);
111                     write1++;
112                     if(wd == -1){
113                           fprintf(stderr,"output file write, cannot write
    from %s to %s: %s \n",argv[i],outfilename,strerror(errno));
114                           fprintf(stderr,"only write %d bytes",sum);
115                           exit(-1);
116                     }
117                     sum += wd;
118
119               }
120         }
121         int k = optind+1;
122         for(;k < argc; k++){
123               strcat(argv[optind],argv[k]);
124         }
125         fprintf(stderr,"the number of bytes transfered is: %d <read:%d|
    write:%d> and the file is transfered from %s to %s
    \n",sum,read1-1,write1-1,argv[optind],outfilename);
126         exit(0);
127
128   }
```