Computer Science 213

2nd Midterm Solutions

November , 2006

Question 1.

a.

I'm running!		I'm running!	
Me too!		Me too!	
Me too!	OR	I follow you!	OR ….
I follow you!		Me too!	
I follow you!		I follow you!	

b.

Transfer Sector Time = 1/7200/500 * 60 * 1000 ms = 0.017 ms

Average Access Time = seek time + rotational latency + transfer time
= 10 + 1/7200/2*60*1000 + 0.017 ms = 10 + 4.17 + 0.017 = 14.187 = 14.2 ms

c.

Advantage:
CPU is not involved in the transfer and is free to continue processing.
Disadvantage:
May cause bus contention. Need a more intelligent bus controller.

d.

Total number of blocks read: 5

Steps:

1. read the inode for project
2. read the project data block and get the entry for design.txt
3. read the inode for design.txt ; 12th block is the block pointing to by the
   12-10 = no 2 , or
   11-10 = no 1 (if we start counting from 1)
   pointer in the single indirection block
4. get the block pointed to by the 11th data pointer (single indirection block)
5. get the block pointed to by the no 2 (or no 1) pointer of that block

e. The order is not correct. It allows foo.jpg's inode and data blocks to be used by a new file before they are removed from foo.jpg

The correct order is: 3, 2, 1

Question 2.

a..

```
int isin( char* entry,  char* dir )
{
    DIR        *dp;
     struct dirent   *dirp;

     if  ( (dp = opendir( theDir ))  == NULL )
          return 0;

   while ((dirp = readdir(dp)) != NULL )
   {
       if( strcmp( dirp->d_name, entry ) == 0 )
            return 1;
   }
   return 0;
}
```

Question 3

a.

The program will run and greetings.txt will contain: "`World`"

b.

```
int main(int argc, char** argv)
{
    int fd;
     if (argc < 2 || ( fd = open(argv[1], O_RDONLY) ) < 0 )
          fd = STDIN_FILENO;

    char c;
    int lcount = 0;

    while ( read(fd, &c, 1) > 0 )
    {
            if ( c == '\n' )
                 lcount++;
    }
    close(fd);
     printf("The input has %d lines", lcount);
    exit(0);
}
```

Question 4.

a.

A = 0
B = 200
C = 600

b.

A = 400
B = 100
C = 600
Additional Records: ABORT<2> and TRUNCATE<1> (in any order)

c.

A = 400
B = 100
C = 600