Week - 7
(03 August 2023)
Experiment - 7

Question:
Write a C program to simulate the following contiguous memory allocation techniques:

(a) Worst-fit

(b) Best-fit

(c) First-fit

Program:

```
#include <stdio.h>

#define max 25

void firstFit(int b[], int nb, int f[], int nf);
void worstFit(int b[], int nb, int f[], int nf);
void bestFit(int b[], int nb, int f[], int nf);

int main()
{
   int b[max], f[max], nb, nf;

   printf("Memory Management Schemes\n");

   printf("\nEnter the number of blocks:");
   scanf("%d", &nb);

   printf("Enter the number of files:");
   scanf("%d", &nf);

   printf("\nEnter the size of the blocks:\n");
   for (int i = 1; i <= nb; i++)
   {
      printf("Block %d:", i);
      scanf("%d", &b[i]);
   }

   printf("\nEnter the size of the files:\n");
   for (int i = 1; i <= nf; i++)
   {
      printf("File %d:", i);
      scanf("%d", &f[i]);
   }

   printf("\nMemory Management Scheme - First Fit");
```

```
    firstFit(b, nb, f, nf);

    printf("\n\nMemory Management Scheme - Worst Fit");
    worstFit(b, nb, f, nf);

    printf("\n\nMemory Management Scheme - Best Fit");
    bestFit(b, nb, f, nf);

    return 0;
}

void firstFit(int b[], int nb, int f[], int nf)
{
    int bf[max] = {0};
    int ff[max] = {0};
    int frag[max], i, j;

    for (i = 1; i <= nf; i++)
    {
        for (j = 1; j <= nb; j++)
        {
            if (bf[j] != 1 && b[j] >= f[i])
            {
                ff[i] = j;
                bf[j] = 1;
                frag[i] = b[j] - f[i];
                break;
            }
        }
    }

    printf("\nFile_no:\tFile_size:\tBlock_no:\tBlock_size:\tFragment");
    for (i = 1; i <= nf; i++)
    {
        printf("\n%d\t\t%d\t\t%d\t\t%d\t\t%d", i, f[i], ff[i], b[ff[i]], frag[i]);
    }
}

void worstFit(int b[], int nb, int f[], int nf)
{
    int bf[max] = {0};
    int ff[max] = {0};
    int frag[max], i, j, temp, highest = 0;

    for (i = 1; i <= nf; i++)
    {
        for (j = 1; j <= nb; j++)
```

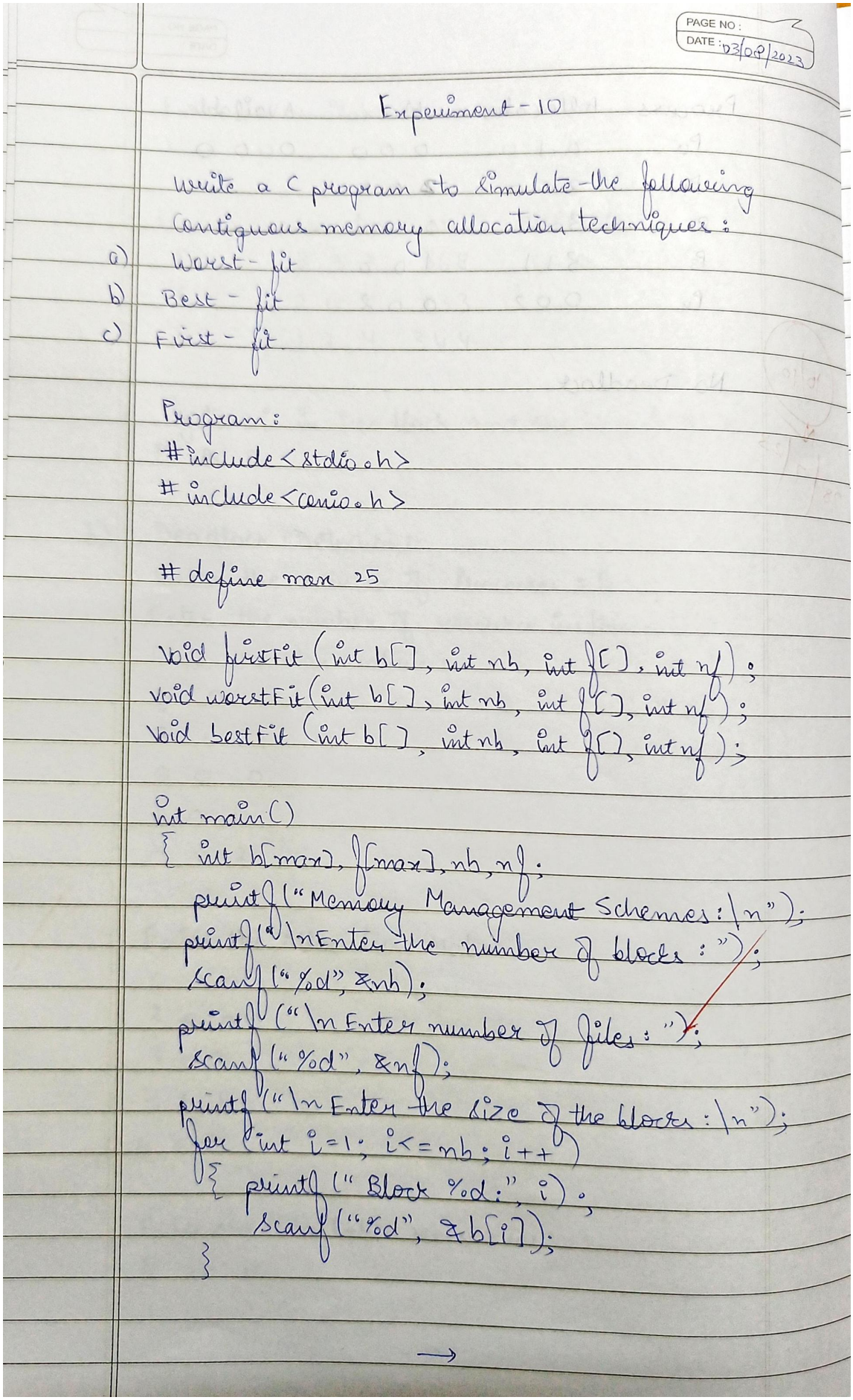
```
        {
            if (bf[j] != 1)
            {
                temp = b[j] - f[i];
                if (temp >= 0 && highest < temp)
                {
                    ff[i] = j;
                    highest = temp;
                }
            }
        }
        frag[i] = highest;
        bf[ff[i]] = 1;
        highest = 0;
    }

    printf("\nFile_no:\tFile_size:\tBlock_no:\tBlock_size:\tFragment");
    for (i = 1; i <= nf; i++)
    {
        printf("\n%d\t\t%d\t\t%d\t\t%d\t\t%d", i, f[i], ff[i], b[ff[i]], frag[i]);
    }
}

void bestFit(int b[], int nb, int f[], int nf)
{
    int bf[max] = {0};
    int ff[max] = {0};
    int frag[max], i, j, temp, lowest = 10000;

    for (i = 1; i <= nf; i++)
    {
        for (j = 1; j <= nb; j++)
        {
            if (bf[j] != 1)
            {
                temp = b[j] - f[i];
                if (temp >= 0 && lowest > temp)
                {
                    ff[i] = j;
                    lowest = temp;
                }
            }
        }
        frag[i] = lowest;
        bf[ff[i]] = 1;
        lowest = 10000;
    }
```

```
    printf("\nFile_no:\tFile_size:\tBlock_no:\tBlock_size:\tFragment");
    for (i = 1; i <= nf && ff[i] != 0; i++)
    {
        printf("\n%d\t\t%d\t\t%d\t\t%d\t\t%d", i, f[i], ff[i], b[ff[i]], frag[i]);
    }
}
```

Output:

```
Memory Management Schemes

Enter the number of blocks:3
Enter the number of files:2

Enter the size of the blocks:
Block 1:5
Block 2:2
Block 3:7

Enter the size of the files:
File 1:1
File 2:4

Memory Management Scheme - First Fit
File_no:        File_size:      Block_no:       Block_size:     Fragment
1               1               1               5               4
2               4               3               7               3

Memory Management Scheme - Worst Fit
File_no:        File_size:      Block_no:       Block_size:     Fragment
1               1               3               7               6
2               4               1               5               1

Memory Management Scheme - Best Fit
File_no:        File_size:      Block_no:       Block_size:     Fragment
1               1               2               2               1
2               4               1               5               1
```

Observation Book Pictures:



PAGE NO :
DATE : 23/08/2023

Experiment - 10

Write a C program to simulate the following contiguous memory allocation techniques :

a) Worst - fit
b) Best - fit
c) First - fit

Program :

```
#include <stdio.h>
#include <conio.h>

#define max 25

void firstFit (int b[], int nb, int f[], int nf);
void worstFit (int b[], int nb, int f[], int nf);
void bestFit (int b[], int nb, int f[], int nf);

int main()
{ int b[max], f[max], nb, nf;
  printf("Memory Management Schemes:\n");
  printf("\nEnter the number of blocks :");
  scanf("%d", &nb);
  printf("\n Enter number of files :");
  scanf("%d", &nf);
  printf("\n Enter the size of the blocks :\n");
  for (int i=1; i<=nb; i++)
  { printf(" Block %d:", i);
    scanf("%d", &b[i]);
  }
```

→

```
printf("Enter the size of the files:\n");
for(int i=1; i<=nf; i++)
{ printf("File %d:",i);
  scanf("%d",&f[i]);
}

printf("\n\n Memory Management Scheme -
        First Fit\n");
firstFit(b, nb, f, nf);

printf("\n\n Memory Management Scheme -
        Worst Fit\n");
worstFit(b, nb, f, nf);

printf("\n\n Memory Management Scheme -
        Best Fit\n");
bestFit(b, nb, f, nf);

return 0;
}

void firstFit(int b[], int nb, int f[], int nf)
{ int bf[max] = {0};
  int ff[max] = {0};
  int frag[max], i, j;

  for(i=1; i<nf; i++)
  { for(j=1; j<=nb; j++)
    { if(bf[j] != 1 && b[j] >= f[i])
      { ff[i] = j;
        bf[j] = 1;
        frag[i] = b[j] - f[i];
        break;
```

```
        }
    }
}
printf("\nFile no:\t File size:\t Block no:\t
        Block size:\t Fragment");
for(i=1; i<=nf; i++)
{ printf("\n%d\t\t %d\t\t %d\t\t %d\t\t %d",
        i, f[i], ff[i], b[ff[i]], frag[i]);
}
}

void worstFit(int b[], int nb, int f, int nf)
{ int bf[max]={0};
  int ff[max]={0};
  int frag[max], i, j, temp, highest=0;

  for(i=1; i<=nf; i++)
  { for(j=1; j<=nb; j++)
    { if(bf[j]!=1)
      { temp = b[j]-f[i];
        if(temp>=0 && highest<temp)
        { ff[i]=j;
          highest=temp;
        }
      }
    }
  frag[i]=highest;
  bf[ff[i]]=1;
  highest=0;
}
```

```
printf("\n File no. \t File size: \t Block no: \t
        Block size: \t Fragment");
for(i=1; i<=nf; i++)
{ printf("\n%d \t\t %d \t\t %d \t\t %d \t\t %d",
        i, f[i], ff[i], b[ff[i]], frag[i]);
}
}

void bestFit(int b[], int nb, int f[], int nf)
{ int bf[max]={0};
int ff[max]={0};
int frag[max], i, j, temp, lowest = 10000;

for(i=1; i<=nf; i++)
{ for(j=1; j<=nb; j++)
{ if(bf[j] != 1)
{ temp = b[j] - f[i];
if(temp >= 0 && lowest > temp)
{ ff[i] = j;
lowest = temp;
}
}
}
frag[i] = lowest;
bf[ff[i]] = 1;
lowest = 10000;
}
printf("\n File no: \t File size: \t Block no: \t
        Block size: \t Fragment");
for(i=1; i<=nf && ff[i] != 0; i++)
{ printf("\n%d \t\t %d \t\t %d \t\t %d \t\t %d",
        i, f[i], ff[i], b[ff[i]], frag[i]);
}
}
```

PAGE NO :
DATE :

Output:

Memory Management Schemes:

Enter the number of blocks: 3

Enter the number of files: 2

Enter the size of the blocks:

Block 1: 5

Block 2: 2

Block 3: 7

Enter the size of the files:

File 1: 1

File 2: 4

Memory Management Scheme - First Fit

File no.	File size	Block no.	Block size	Fragment
1	1	1	5	4
2	4	3	7	3

Memory Management Scheme - Worst Fit

File no.	File size	Block no.	Block size	Fragment
1	1	3	7	6
2	4	1	5	1

Memory Management Scheme - Best Fit

File no.	File size	Block no.	Block size	Fragment
1	1	2	2	1
2	4	1	5	1

10/10

3/3 23