EX.NO:6 **CONTIGUOUS MEMORY ALLOCATION**

DATE : 29.03.2023

AIM:

To write a 'C' program to perform contiguous memory allocation.

i. First fit
ii. Best fit
iii. Worst fit

ALGORITHM:

- Declare the process array and memory array globally.

i. **First fit** : Allocate the first hole that is large enough.
ii. **Best fit** : Allocate the small hole that is large enough.
iii. **Worst fit** : Allocate the largest hole that is large enough.

- Using the switch case perform the following algorithm.

PROGRAM:

```
#include<stdio.h>
#include<conio.h>
int noofprocess,noofhole;
int holeold[10],holesize[10],processsize[10],holenumber[10];
void oldtonew();

void firstfit()
{
   int i,j;
   printf("\n\t\tFirst Fit\n");
   printf("\n\t\t=====================================================");
```

```
    printf("\n\t\tProcess Psize Allocatedhole   Remaining hole size\n");
    printf("\t\t=============================================================");
    for(i=1;i<=noofprocess;i++)
    {
        int c=0;
        for(j=1;j<=noofhole;j++)
        {
            if(processsize[i]<=holesize[j])
            {
                printf("\n\t\tP%d\t%d\tH%d",i,processsize[i],j);
                c=1;
                holesize[j]-=processsize[i];
                printf("            \t%d KB",holesize[j]);
                break;
            }
        }
        if(c==0)
        {
            printf("\n\t\tP%d\t%d\tNot allocated",i,processsize[i]);
        }
    }
}

void bestfit()
{
    int i,j;
    int temp;
```

```
for(i=1;i<=noofhole;i++)
{
   for(j=i+1;j<=noofhole;j++)
   {
      if(holesize[i]>holesize[j])
      {

         temp=holesize[i];
         holesize[i]=holesize[j];
         holesize[j]=temp;



         temp=holenumber[i];
         holenumber[i]=holenumber[j];
         holenumber[j]=temp;
      }
   }
}

printf("\n\t\tBest Fit\n");
printf("\t\t=======================================================");
printf("\n\t\tProcess Psize Allocated hole   Remaining hole size\n");
printf("\t\t=======================================================");
for(i=1;i<=noofprocess;i++)
{
int c=0;
for(j=1;j<=noofhole;j++)
{
```

```
        if(processsize[i]<=holesize[j])
        {
            printf("\n\t\tP%d\t%d\tH%d",i,processsize[i],holenumber[j]);
            c=1;
            holesize[j]-=processsize[i];
            printf("            \t%d KB",holesize[j]);
            break;
        }
    }
    if(c==0)
        printf("\n\t\tP%d\t%d\tNot allocated",i,processsize[i]);
    }
}

void worstfit()
{
    int i,j;
    int temp;
    for(i=1;i<=noofhole;i++)
    {
        for(j=i+1;j<=noofhole;j++)
        {
            if(holesize[i]<holesize[j])
            {

                temp=holesize[i];
                holesize[i]=holesize[j];
                holesize[j]=temp;
```

```
            temp=holenumber[i];
            holenumber[i]=holenumber[j];
            holenumber[j]=temp;
        }
    }
}
printf("\n\t\tWorst Fit\n");
printf("\t\t=======================================================");
printf("\n\t\tProcess Psize Allocatedhole   Remaining hole size\n");
printf("\t\t=======================================================");
for(i=1;i<=noofprocess;i++)
{
    int c=0;
    for(j=1;j<=noofhole;j++)
    {
        if(processsize[i]<=holesize[j])
        {
            printf("\n\t\tP%d\t%d\tH%d",i,processsize[i],holenumber[j]);
            c=1;
            holesize[j]-=processsize[i];
            printf("            \t%d KB",holesize[j]);
            break;
        }
    }
    if(c==0)
        printf("\n\t\tP%d\t%d\tNot allocated",i,processsize[i]);
}
}
```

```
void oldtonew()
{
    int i;
    for(i=1;i<=noofhole;i++)
    {
        holesize[i]=holeold[i];
    }
}

int main()
{
    int i,j;
    int ch;

    printf("\n\t\t-------------------------------------------------------\n");
    printf("\t\t\t\tMemory Allocation\n");
    printf("\n\t\t-------------------------------------------------------\n");
    printf("Enter the number of the memory holes: ");
    scanf("%d",&noofhole);
    printf("Enter the eack block hole size: \n");
    for(i=1;i<=noofhole;i++)
    {
        printf("Hole %d: ",i);
        scanf("%d",&holesize[i]);
        holenumber[i]=i;
        holeold[i]=holesize[i];
    }
```

```
printf("\n\t\t-------------------------------------------------------\n");
printf("Enter the number of process: ");
scanf("%d",&noofprocess);
printf("Enter the size of each process:\n");
for(i=1;i<=noofprocess;i++)
{
   printf("Process %d: ",i);
   scanf("%d",&processsize[i]);
}

do
{
   printf("\n\t\t-------------------------------------------------------\n");

   printf("\nMenu for allocation:\n");
   printf("\n1.First Fit \n2.Best Fit \n3.Worst Fit\n4.Exit");
   printf("\nEnter your choice: ");
   scanf("%d",&ch);
   printf("\n\t\t-------------------------------------------------------\n");

   switch(ch)
   {
      case 1:
         firstfit();
      break;

      case 2:
         oldtonew();
```

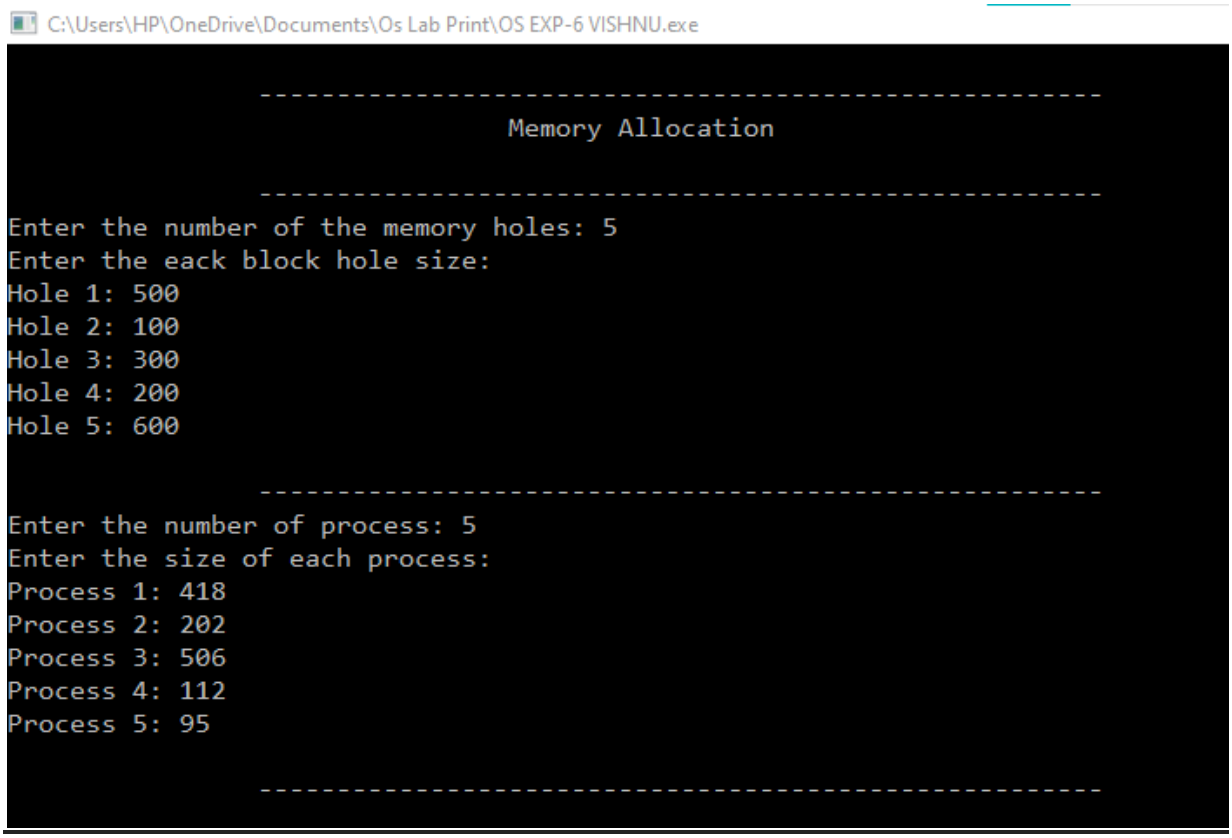
```
            bestfit();
        break;

        case 3:
            oldtonew();
            worstfit();
        break;

        case 4:
            printf("Successfully Done!!!!!");
        break;

        default:
            printf("Wrong choice!!");
        break;
      }
   }while(ch!=4);
   getch();
   return 0;
}
```

OUTPUT:



```
C:\Users\HP\OneDrive\Documents\Os Lab Print\OS EXP-6 VISHNU.exe

                ----------------------------------------------------
                                Memory Allocation

                ----------------------------------------------------
Enter the number of the memory holes: 5
Enter the eack block hole size:
Hole 1: 500
Hole 2: 100
Hole 3: 300
Hole 4: 200
Hole 5: 600

                ----------------------------------------------------
Enter the number of process: 5
Enter the size of each process:
Process 1: 418
Process 2: 202
Process 3: 506
Process 4: 112
Process 5: 95

                ----------------------------------------------------
```

```
Menu for allocation:

1.First Fit
2.Best Fit
3.Worst Fit
4.Exit
Enter your choice: 1

                ----------------------------------------------------

                First Fit

                ========================================================
                Process Psize Allocatedhole   Remaining hole size
                ========================================================
                P1      418     H1              82 KB
                P2      202     H3              98 KB
                P3      506     H5              94 KB
                P4      112     H4              88 KB
                P5      95      H2              5 KB
                ----------------------------------------------------
```

```
Menu for allocation:

1.First Fit
2.Best Fit
3.Worst Fit
4.Exit
Enter your choice: 2

                ---------------------------------------------------

                Best Fit
                =====================================================
                Process Psize Allocated hole   Remaining hole size
                =====================================================
                P1      418     H1              82 KB
                P2      202     H3              98 KB
                P3      506     H5              94 KB
                P4      112     H4              88 KB
                P5      95      H2              5 KB
                -----------------------------------------------------
```

```
Menu for allocation:

1.First Fit
2.Best Fit
3.Worst Fit
4.Exit
Enter your choice: 3

                ---------------------------------------------------

                Worst Fit
                =====================================================
                Process Psize Allocatedhole   Remaining hole size
                =====================================================
                P1      418     H5              182 KB
                P2      202     H2              298 KB
                P3      506     Not allocated
                P4      112     H5              70 KB
                P5      95      H2              203 KB
                -----------------------------------------------------

Menu for allocation:

1.First Fit
2.Best Fit
3.Worst Fit
4.Exit
Enter your choice: 4

                ---------------------------------------------------
Successfully Done!!!!!
```

Observation	
Record	
Total	
Initial	

RESULT:

The programs for contiguous memory allocation are executed successfully and the outputs are verified