18BCB0142
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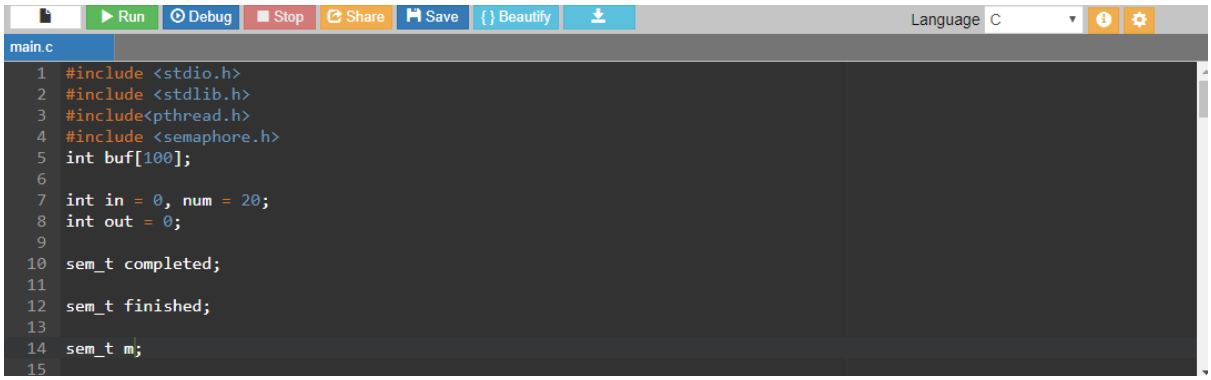
OS LAB DA

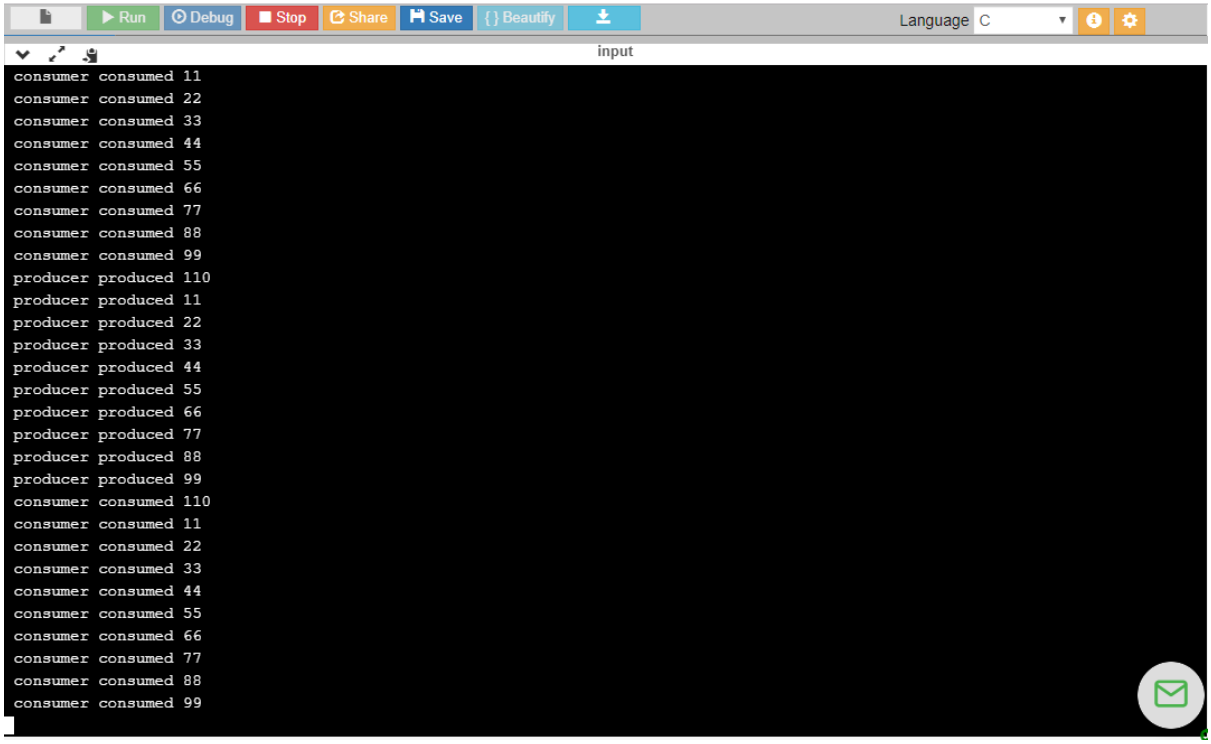
Q1.

```
#include <stdio.h>
#include <stdlib.h>
#include<pthread.h>
#include <semaphore.h>
int buf[100];

int in = 0, num = 20;
int out = 0;

sem_t completed;

sem_t finished;

sem_t m;

int bsize;

int c = 0;

void *
producer ()
{

int i, item;

for (i = 1;; i++)

   {

if (i % num == 0)

sleep (10);                    //change the value inside sleep
     item = c * 10 + c;

sem_wait (&finished);

sem_wait (&m);

buf[in] = item;

in = (in + 1) % (bsize);
```

```
c++;

printf ("producer produced %d\n ", item);

sem_post (&m);

sem_post (&completed);
   }
}


void *
consumer ()
{

int i, item;

for (i = 1;; i++)

   {

if (i % num == 0)

sleep (10);

sem_wait (&completed);

sem_wait (&m);

item = buf[out];

out = (out + 1) % (bsize);

c--;

printf ("consumer consumed %d\n ", item);

sem_post (&m);

sem_post (&finished);
   }

}


int
main ()
{
```

```
int i = 0, j = 0;

pthread_t prod, cons;

printf ("\nThe Buffer Size:");

scanf ("%d", &bsize);

sem_init (&completed, 0, 0);

sem_init (&finished, 0, bsize);

sem_init (&m, 0, 1);

pthread_create (&prod, NULL, producer, NULL);

pthread_create (&cons, NULL, consumer, NULL);

pthread_join (prod, NULL);

pthread_join (cons, NULL);

}
```





Q2.

```
#include<stdio.h>
struct memblck
{

int size, flag, index;

} b[20], temp;

int n;

void
sort ()
{

int i, j;

struct memblck temp;

for (i = 0; i < n - 1; i++)

   {
```

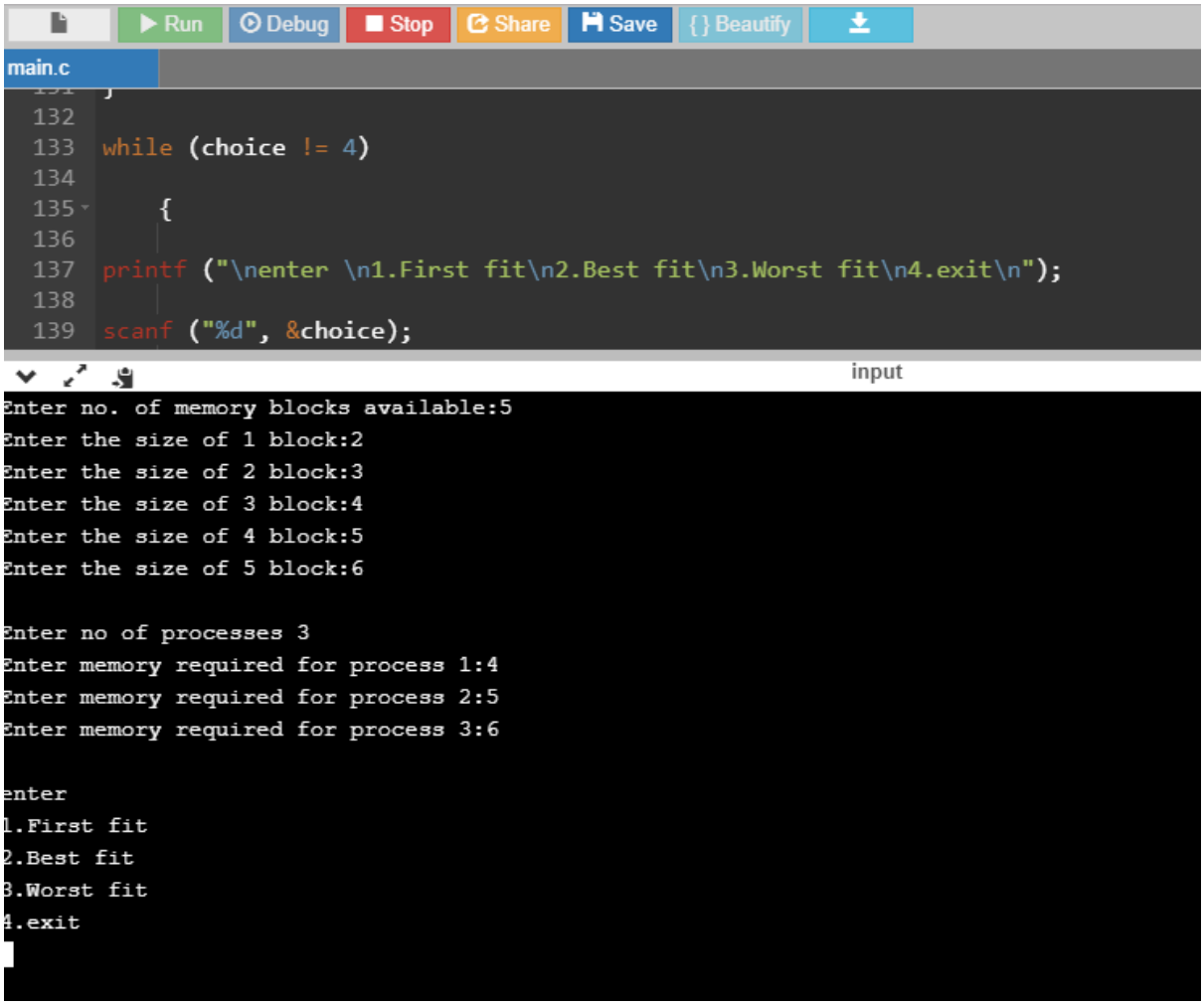
```
for (j = 0; j < n - i - 1; j++)
            {
if (b[j].size > b[j + 1].size)
                {
temp.size = b[j].size;
b[j].size = b[j + 1].size;
b[j + 1].size = temp.size;
temp.index = b[j].index;
b[j].index = b[j + 1].index;
b[j + 1].index = temp.index;
}
}
}
}

void
revsort ()
{
int i, j;
struct memblck temp;
for (i = 0; i < n - 1; i++)
   {
for (j = 0; j < n - i - 1; j++)
            {
if (b[j].size < b[j + 1].size)
                {
temp.size = b[j].size;
```

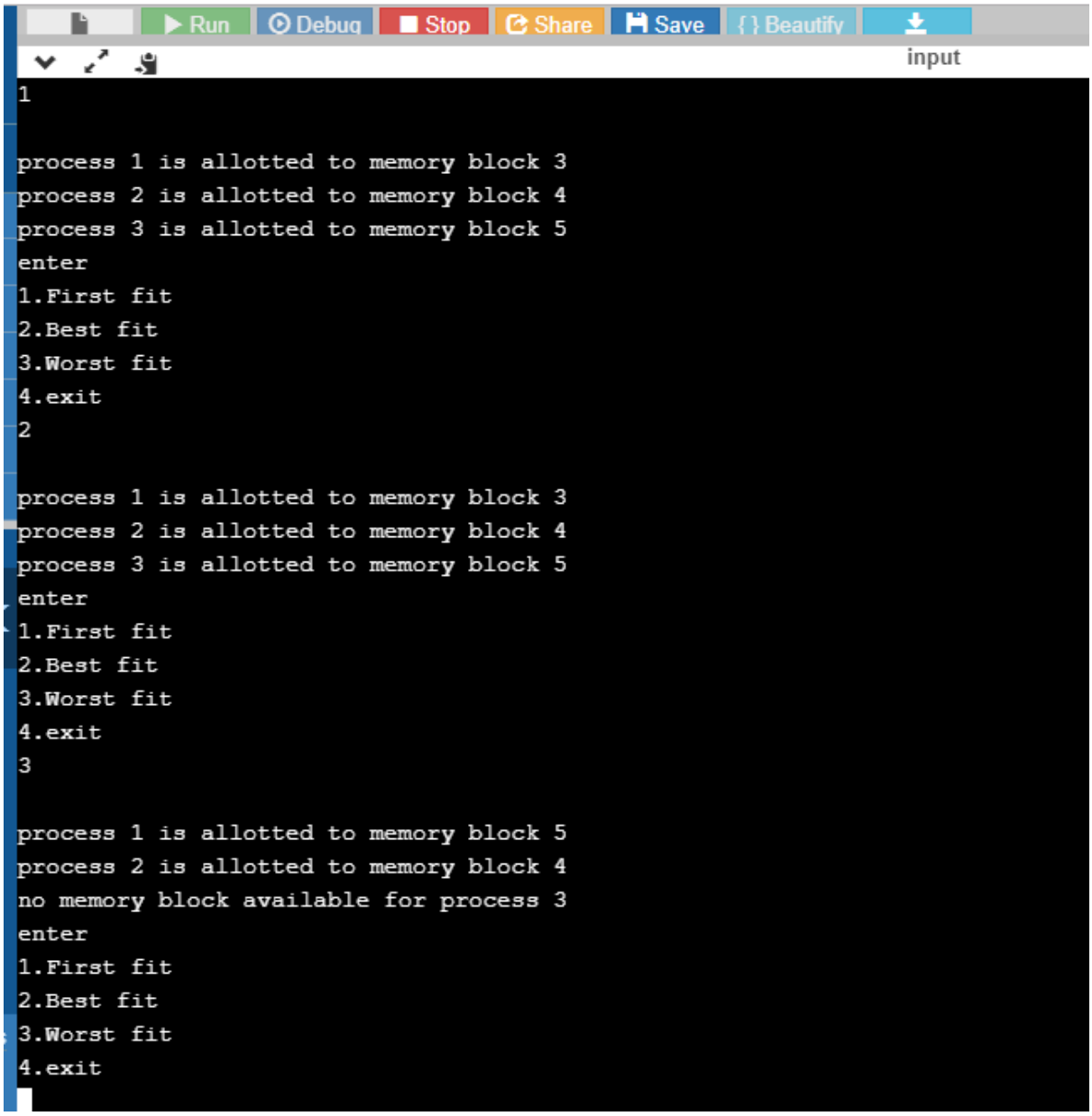
```
b[j].size = b[j + 1].size;

b[j + 1].size = temp.size;

temp.index = b[j].index;

b[j].index = b[j + 1].index;

b[j + 1].index = temp.index;

}

}

}

}


int
main ()
{

int i, j, pno, p[20], flag[20], choice = 0, a;

printf ("Enter no. of memory blocks available:");

scanf ("%d", &n);

for (i = 0; i < n; i++)

   {

printf ("Enter the size of %d block:", i + 1);

scanf ("%d", &b[i].size);

b[i].flag = 0;

b[i].index = i;

}

printf ("\nEnter no of processes ");

scanf ("%d", &pno);

for (i = 0; i < pno; i++)

   {
```

```
printf ("Enter memory required for process %d:", i + 1);

scanf ("%d", &p[i]);

flag[i] = 0;

}

while (choice != 4)

  {

printf ("\nenter \n1.First fit\n2.Best fit\n3.Worst fit\n4.exit\n");

scanf ("%d", &choice);

switch (choice)

          {

case 1:

for (i = 0; i < pno; i++)

              {

for (j = 0; j < n; j++)

                      {

if (p[i] <= b[j].size && b[j].flag == 0 && flag[i] == 0)

                          {

printf ("\nprocess %d is allotted to memory block %d",
                                        i + 1, b[j].index + 1);

b[j].flag = 1;

flag[i] = 1;

break;

}
                      }

if (flag[i] == 0)

printf ("\nno memory block available for process %d", i + 1);

}
```

```
for (i = 0; i < n; i++)
b[i].flag = 0;
for (i = 0; i < pno; i++)
flag[i] = 0;
break;
case 2:
sort ();
for (i = 0; i < pno; i++)
        {
for (j = 0; j < n; j++)
            {
if (p[i] <= b[j].size && b[j].flag == 0 && flag[i] == 0)
              {
printf ("\nprocess %d is allotted to memory block %d",
                    i + 1, b[j].index + 1);
b[j].flag = 1;
flag[i] = 1;
}
            }
if (flag[i] == 0)
printf ("\nno memory block available for process %d", i + 1);
}
for (i = 0; i < n; i++)
b[i].flag = 0;
for (i = 0; i < pno; i++)
flag[i] = 0;
```

```
break;

case 3:

revsort ();

for (i = 0; i < pno; i++)

                {

for (j = 0; j < n + 1; j++)

                        {

if (p[i] <= b[j].size && b[j].flag == 0 && flag[i] == 0)

                            {

printf ("\nprocess %d is allotted to memory block %d",
                                        i + 1, b[j].index + 1);

b[j].flag = 1;

flag[i] = 1;

}
                        }

if (flag[i] == 0)

printf ("\nno memory block available for process %d", i + 1);

}

for (i = 0; i < n; i++)

b[i].flag = 0;

for (i = 0; i < pno; i++)

flag[i] = 0;

}

}

printf ("\n");

return 0;

}
```


Run
Debug
Stop
Share
Save
{ } Beautify
main.c
132
133 while (choice != 4)
134
135 {
136
137 printf ("\nenter \n1.First fit\n2.Best fit\n3.Worst fit\n4.exit\n");
138
139 scanf ("%d", &choice);
input
Enter no. of memory blocks available:5
Enter the size of 1 block:2
Enter the size of 2 block:3
Enter the size of 3 block:4
Enter the size of 4 block:5
Enter the size of 5 block:6
Enter no of processes 3
Enter memory required for process 1:4
Enter memory required for process 2:5
Enter memory required for process 3:6
enter
1.First fit
2.Best fit
3.Worst fit
4.exit


Run
Debug
Stop
Share
Save
{ } Beautify
input
1
process 1 is allotted to memory block 3
process 2 is allotted to memory block 4
process 3 is allotted to memory block 5
enter
1.First fit
2.Best fit
3.Worst fit
4.exit
2
process 1 is allotted to memory block 3
process 2 is allotted to memory block 4
process 3 is allotted to memory block 5
enter
1.First fit
2.Best fit
3.Worst fit
4.exit
3
process 1 is allotted to memory block 5
process 2 is allotted to memory block 4
no memory block available for process 3
enter
1.First fit
2.Best fit
3.Worst fit
4.exit