Registration Number – 21BAI1300

Name – Roshan Naidu

Dr. Leki Chom Thungon – L15 + L16 – BCSE303P

Oprating Systems Lab FAT

1. Banker's Algorithm – To check if a safe sequence or not by taking inputs given in the FAT Lab test paper.

Code-

```
#include <stdio.h>

int main()
{
int i, j, n, r, alloc[30][30], avail[10], remneed[30][30], max[30][30], work[30], w[30], y;

int sum, ind = 0;

int flag = 0;

int safeseq[30];


// To get the total number of processes incoming :-


printf("Enter number of processes: ");
scanf("%d", &n);

printf("Enter the number of resources present: ");
scanf("%d", &r);

printf("Enter allocation matrix:\n");
for (i = 0; i < n; i++)
{

        for (j = 0; j < r; j++)
        {
                scanf("%d", &alloc[i][j]);
        }
```

```
}


printf("Enter maximum of the allocation matrix: \n");

for (i = 0; i < n; i++)
{
        for (j = 0; j < r; j++)
        {
        scanf("%d", &max[i][j]);
        }
}

printf("Enter the available resources: \n");

for (i = 0; i < r; i++)
{
scanf("%d", &avail[i]);
}

// Calculate need matrix :-

for (i = 0; i < n; i++)
{
        for (j = 0; j < r; j++)
        {
        remneed[i][j] = max[i][j] - alloc[i][j];
        }
}

// Initialize work and finish arrays

for (i = 0; i < r; i++)
{
        work[i] = avail[i];
}


int finish[n];

for (i = 0; i < n; i++)
{
        finish[i] = 0;
}

// Applying the Banker's Algorithm
int k = 0;
```

```
// Initialize the index for safe sequence array

int found;

while (k < n)
{
	found = 0;
	for (i = 0; i < n; i++)
	{
		if (finish[i] == 0)
		{
		flag = 0;
		for (j = 0; j < r; j++)
		{
			if (remneed[i][j] > work[j])
			{
				flag = 1;
				break;
			}
		}

		if (flag == 0)
		{
			w[k] = i;
			k++;
			for (y = 0; y < r; y++)

			work[y] += alloc[i][y];
			finish[i] = 1;
			found = 1;

		}
		}
	}

	if (found == 0)
	break;
}

if (k == n)
// All processes were safely executed

{
	printf("Safe Sequence: ");
	for (i = 0; i < n; i++)
	{
		printf("%d ", w[i]);
		safeseq[i] = w[i];
```

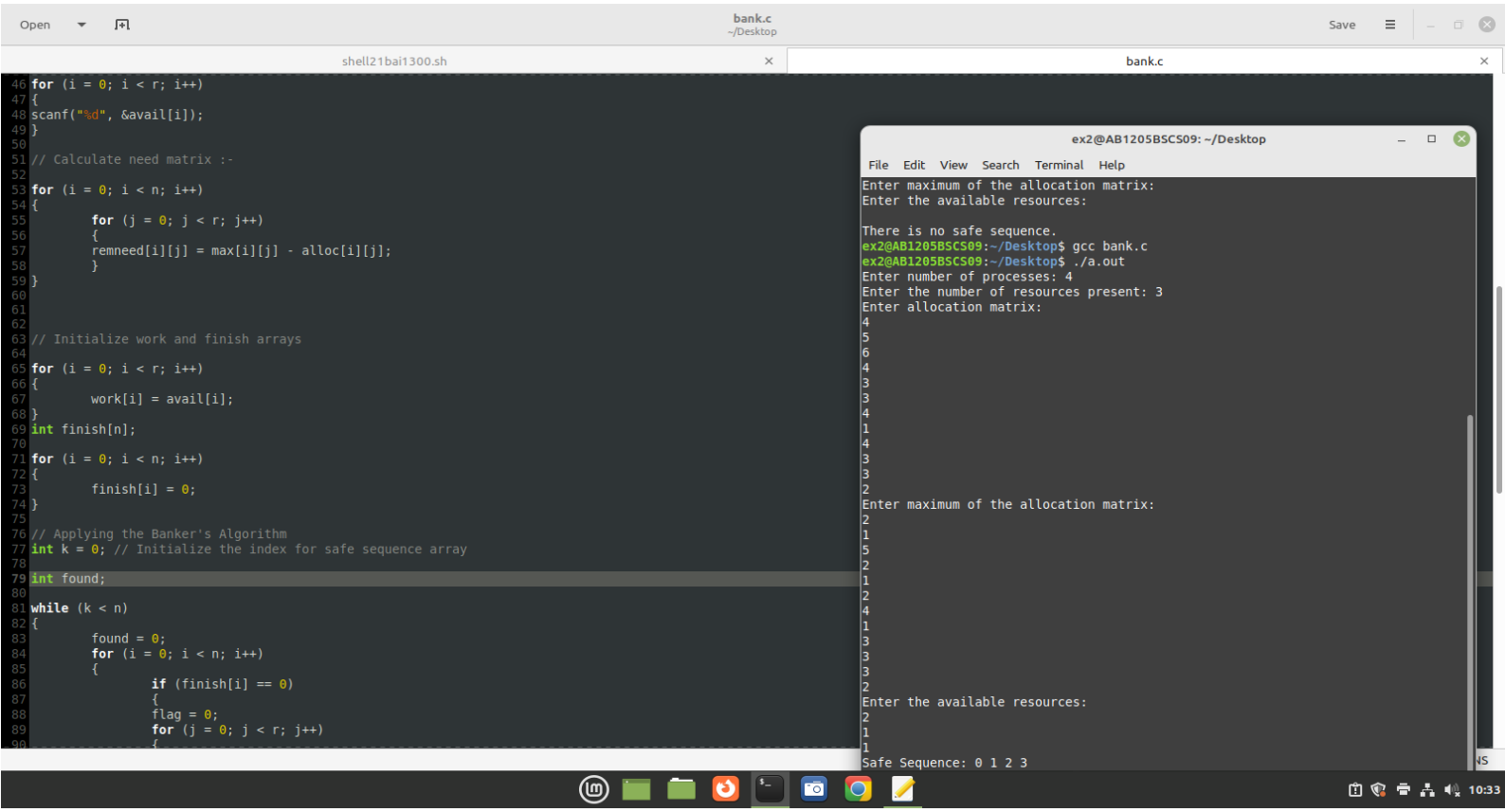
```
        }
        printf("\n");
}

else

// There is no safe sequence
{
        printf("\nThere is no safe sequence.\n");
}

return 0;
}
```

OUTPUT-



1. Shell Programming – to print if 3 numbers are equal by taking input from the terminal command window.

Code-

```
#!/bin/sh

echo "Enter Num1"
read num1
echo "Enter Num2"
read num2
echo "Enter Num3"
read num3

if [ $num1 == $num2 ] && [ $num1 == $num3 ]

then
    echo Yes, the numbers are equal
else
    echo No, the numbers are not equal
fi
```

OUTPUT-