**LAB 7**

**Q. Write a program to implement a Banker’s algorithm.**

#include <stdio.h>

int main()

{

// P0, P1, P2, P3, P4 are the Process names here

int n, m, i, j, k;

n = 5; // Number of processes

m = 3; // Number of resources

int alloc[5][3] = {{0, 1, 0}, // P0 // Allocation Matrix

{2, 0, 0}, // P1

{3, 0, 2}, // P2

{2, 1, 1}, // P3

{0, 0, 2}}; // P4

int max[5][3] = {{7, 5, 3}, // P0 // MAX Matrix

{3, 2, 2}, // P1

{9, 0, 2}, // P2

{2, 2, 2}, // P3

{4, 3, 3}}; // P4

int avail[3] = {3, 3, 2}; // Available Resources

int f[n], ans[n], ind = 0;

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

{

f[k] = 0;

}

int need[n][m];

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

{

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

need[i][j] = max[i][j] - alloc[i][j];

}

int y = 0;

for (k = 0; k < 5; k++)

{

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

{

if (f[i] == 0)

{

int flag = 0;

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

{

if (need[i][j] > avail[j])

{

flag = 1;

break;

}

}

if (flag == 0)

{

ans[ind++] = i;

for (y = 0; y < m; y++)

avail[y] += alloc[i][y];

f[i] = 1;

}

}

}

}

int flag = 1;

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

{

if (f[i] == 0)

{

flag = 0;

printf("The following system is not safe");

break;

}

}

if (flag == 1)

{

printf("Following is the SAFE Sequence\n");

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

printf(" P%d ->", ans[i]);

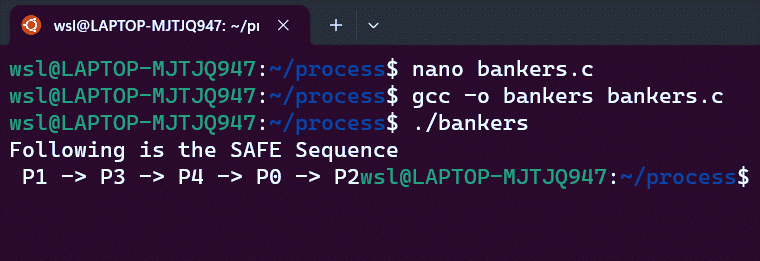
printf(" P%d", ans[n - 1]);

}

return (0);

}

**Output:**

****