OPERATING SYSTEM - CS23431

EXP 9

DEADLOCK AVOIDANCE

NAME: ARUL JOTHI P ROLL NO: 230701034

PROGRAM:

#include <stdio.h>

int main() { int resource, process; printf("Enter number of resources: "); scanf("%d", &resource); printf("Enter number of processes: "); scanf("%d", &process);

int inst[resource]; printf("Enter max instance of each resource: "); for (int i = 0; i < resource; i++) { scanf("%d", &inst[i]);

}

int allocated[process][resource], max[process][resource], need[process][resource]; int available[resource];

printf("Enter allocated matrix row-wise:\n"); for (int i = 0; i < process; i++) { printf("Process %d: ", i + 1); for (int j = 0; j < resource; j++) { scanf("%d", &allocated[i][j]);

}

}

printf("Enter Max matrix row-wise:\n"); for (int i = 0; i < process; i++) { printf("Process %d: ", i + 1); for (int j = 0; j < resource; j++) { scanf("%d", &max[i][j]);

}

}

for (int i = 0; i < process; i++) { for (int j = 0; j < resource; j++) { need[i][j] = max[i][j] - allocated[i][j];

}

}

for (int j = 0; j < resource; j++) { int sum = 0; for (int i = 0; i < process; i++) { sum += allocated[i][j];

}

available[j] = inst[j] - sum;

}

int finish[process]; for (int i = 0; i < process; i++) { finish[i] = 0;

}

int safeseq[process]; int count = 0, canrun, notsafe = 0;

while (count < process) { int found = 0; for (int i = 0; i < process; i++) { if (!finish[i]) { canrun = 1; for (int j = 0; j < resource; j++) { if (need[i][j] > available[j]) { canrun = 0; break;

} } if (canrun) { for (int j = 0; j < resource; j++) { available[j] += allocated[i][j];

}

safeseq[count++] = i;

finish[i] = 1; found = 1;

}

} } if (!found) { printf("System is not in safe sequence\n"); notsafe = 1; break;

}

}

if (!notsafe) {

printf("The system is in a safe sequence:\n"); for (int i = 0; i < process; i++) { printf("P%d", safeseq[i]); if (i != process - 1) { printf(" -> ");

} } printf("\n");

}

return 0;

}

OUTPUT:

