**BPDC, Dubai – II Semester, 2022-2023**

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| **Course No: CS F211**  **Date: 18 APR 2023** | **LAB EXERCISE 9** | **Course Title: DSA** |

**Aim:** To implement Shortest Job First (SJF) scheduler using max-heap implementation of priority queue

**Shortest Job First (SJF) scheduler:**

A process can be defined as a program in execution stage. One of the primary functions of any operating system (OS) is process scheduling. A process scheduler runs whenever the CPU becomes idle. The objective of a process scheduler is to select a process from a list of processes and allocate the CPU to it.

An SJF scheduler is a process scheduler which always picks the job (process) with shortest burst time (time necessary to execute) and allocates the CPU to it. Given a set of processes and their corresponding burst time, the aim of this experiment is to output a SJF schedule using max-heap implementation of priority queues.

**Tasks:**

Write a C program to perform the following

1. Take an input array (of structures) of Process id (unique identifier of a process) and corresponding burst\_time.

2. Perform heapsort to get the SJF schedule of the processes as follows

* Construct a max-heap using the array elements. Use burst time as the key
* Perform *n* delete operations and build the sorted array
* Output the schedule

**Input:**

The following processes arrive at time =0 in the given order to the SJF scheduler.

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| Process id | Burst time |
| *P1* | 27 |
| *P2* | 14 |
| *P3* | 1 |
| *P4* | 4 |
| *P5* | 5 |
| *P6* | 13 |
| *P7* | 8 |
| *P8* | 20 |
| *P9* | 25 |

**Output:**

The SJF schedule is**:** *P3, P4, P5, P7, P6, P2, P8, P9, P1*