DEPARTMENT OF INFORMATION TECHNOLOGY : : VRSEC
20IT3305 OPERATING SYSTEMS
ASSIGNMENT I QUESTION BANK
A.Y 2021-2022

Question No.		Question	Course Outcome	BTL
1.	**a**	Differentiate between user mode and kernel mode.	CO1	Understand

	b	Demonstrate how system calls are implemented when the following C program invokes printf() statement in Linux environment. Explain how dual operation is implemented for this scenario.
		`#include<stdio.h>`
		`Int main()`
		`{`
		`.`
		`.`
		`printf("Hello world");`
		`.`
		`.`
		`return (0)`
		`}`
			CO1	Understand

2	**a**	List and explain the services provided by the operating system.	CO1	Understand
	b	Assume a user wants to write a simple program to read the data from one file and copy them to another file by considering the following specifications • The names of source and destination files can be obtained by asking the user • There can be possible error conditions when input file does not exist or output file already exists. • When both files are set up the program enters a loop to read from input file and write to output file. • After the enter file is copied the program may close both files and terminate normally. Write the system calls that illustrates above sequence of operations.	CO1	Understand
3	**a**	Explain different states of a process with neat diagram	CO1	Understand
	b	For each of the following transitions between process states explain whether the transition is possible or not. i) Run → Wait ii) Wait → Ready	CO1	Understand

<table>
<tr><td></td><td></td><td>iii) Run → New
iv) Wait → run
v) Run → ready</td><td></td><td></td></tr>
<tr><td>4</td><td>a</td><td>Summarize the concept of Inter process communication</td><td>CO3</td><td>Understand</td></tr>
<tr><td></td><td>b</td><td>There are two processes: Producer and Consumer. The producer produces some items and the Consumer consumes that item. The two processes share a common space or memory location known as a buffer where the item produced by the Producer is stored and from which the Consumer consumes the item if needed.
Identify the suitable IPC mechanism for the above scenario. Justify your answer.</td><td>CO3</td><td>Analyze</td></tr>
<tr><td>5</td><td>a</td><td>Describe multithreading models with neat diagrams</td><td>CO1</td><td>Understand</td></tr>
<tr><td></td><td>b</td><td>A Sudoku puzzle uses a 9 X 9 grid in which each column and row, as well as each of the nine 3 X 3 sub grids must contain all of the digits 1…..9. The following figure shows a sample solution to a 9 X 9 Sudoku puzzle.

<table><tr><td>6</td><td>2</td><td>4</td><td>5</td><td>3</td><td>9</td><td>1</td><td>8</td><td>7</td></tr><tr><td>5</td><td>1</td><td>9</td><td>7</td><td>2</td><td>8</td><td>6</td><td>3</td><td>4</td></tr><tr><td>8</td><td>3</td><td>7</td><td>6</td><td>1</td><td>4</td><td>2</td><td>9</td><td>5</td></tr><tr><td>1</td><td>4</td><td>3</td><td>8</td><td>6</td><td>5</td><td>7</td><td>2</td><td>9</td></tr><tr><td>9</td><td>5</td><td>8</td><td>2</td><td>4</td><td>7</td><td>3</td><td>6</td><td>1</td></tr><tr><td>7</td><td>6</td><td>2</td><td>3</td><td>9</td><td>1</td><td>4</td><td>5</td><td>8</td></tr><tr><td>3</td><td>7</td><td>1</td><td>9</td><td>5</td><td>6</td><td>8</td><td>4</td><td>2</td></tr><tr><td>4</td><td>9</td><td>6</td><td>1</td><td>8</td><td>2</td><td>5</td><td>7</td><td>3</td></tr><tr><td>2</td><td>8</td><td>5</td><td>4</td><td>7</td><td>3</td><td>9</td><td>1</td><td>6</td></tr></table>
The task is to determine whether the solution is valid or not. There can be different ways to make this into a multithreaded application.
Provide your own solution identifying how many threads are required and purpose of each thread for this Sudoku problem.</td><td>CO1</td><td>Understand</td></tr>
<tr><td>6.</td><td>a</td><td>Draw and explain queuing diagram representation for process scheduling</td><td>CO2</td><td>Understand</td></tr>
<tr><td></td><td>b</td><td>Compare and contrast different types of schedulers</td><td>CO2</td><td>Understand</td></tr>
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Designation	Name in Capitals	Signature with Date
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