

PRACTICAL EXAM 2022

| Sr. No. | Problem Statement | Marks |
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| | Even Numbers | |
| 1. | <p>a. Write a C program having structure as global variable. This structure can have more than two fields. Except for one field, you can initialize values to all fields in the structure. Run Splint for this C code and report the error generated. (This code should generate error as you have one uninitialized field in structure)</p> <p>b. Write a C program having some global variables that are declared but not used anywhere in the code. Run Splint for this C code and report the error generated.</p> | 10 |
| 2. | <p>Consider a chocolate vending machine that contains four types of chocolates, i.e., coffeestick of 10 Rs, milkbar of 20 Rs, silkchocolate of 50 Rs and darkchocolate of 50 Rs.</p> <p>To select a coffeestick, one inserts 10 rupee note. This process is similar with other types of chocolate. For example, to collect a milkbar, one has to insert 20 rupee note.</p> <p>Create a SPIN model of these two processes, i.e., vender for vending machine having limitless supply and customer having limitless appetite for chocolates. Your model will use message channels for communication between customer and vender.</p> <p>In the second step, you will set a limit for vending machine, i.e., at most 20 coffeesticks, 20 milkbars, 10 silkchocolates and 15 darkchocolates can be supplied in a single run (after this, vending machine needs to refill). Your program should print the amount collected by vending machine at the time where it needs refill or no more chocolate (of any type) can be provided thereafter.</p> | 10 |

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| | Odd Numbers | |
| 1 | Demonstrate use of Undefined parameters with annotations in Splint tool and C Compiler. | 5 |
| 2. | Write a C program to indicate null pointer and dereferenced pointer and Run Splint for this C code and report the error generated. | 5 |
| 3. | Model an office where two computer systems are hooked up to a single printer. Establish mutual exclusion between the two computer systems using a global variable and atomic "test & set" operations. Verify in SPIN model that it is never the case that both systems print at the same time. | 10 |