

Computing System Security I
Mid-Semester Assignment
M.Tech. CrS Second Semester 2020-2021
Indian Statistical Institute Kolkata
Total Marks: 50 (Assignment 30 + Viva 20)

```
1. #include<stdio.h>
   #include<sys/types.h>
   #include<unistd.h>
   void main()
   {
       printf("Real user id = %d, Effective User id = %d\n",getuid(),geteuid());
       seteuid(600);
       printf("Real user id = %d, Effective User id = %d\n",getuid(),geteuid());
       setuid(1000);
       printf("Real user id = %d, Effective User id = %d\n",getuid(),geteuid());
       seteuid(0);
       printf("Real user id = %d, Effective User id = %d\n",getuid(),geteuid());
   }
```

Explain each output line of the program.

Marks 5

2. Both `system()` and `execve()` can be used to execute external programs. Why is `system()` unsafe while `execve()` is safe?

Marks 5

3. Write a Set-UID program which allows you to write a root-owned file.

Marks 10

4. A program `abc` invokes an external program `xyz` using `system()`, which is affected by the `PATH` environment variable. When we invoke `abc` from a shell prompt, how does the shell variable `PATH` in the current shell end up affecting the behavior of the `system()` function?

Marks 10