SSE

Assignment 6 and 7

This assignment comprises two parts- red team part and blue team part.

Assignment 6 - Confundo - (Red team part):-

1) All teams act as red teams.
2) Each team will receive a secret function to be implemented. Eg Add.
3) Team will submit an executable that implements the function. Eg add, input = x,y output = x+y. All the functions will have exactly 2 inputs.
4) In Assignment 7, other teams will try to find the function implemented in your executable. So make sure the executable is able to defend itself against static and dynamic analysis. Have a look at the full assignment to understand the marking scheme.
5) In addition to the input, your program can take at max one another input. This 3rd input may be used to obfuscate dynamic analysis.
6) After the assignment, each submission will be verified by the TAs and will be shared with others for the next part.

Submission Details:-

- An elf that runs on our course VM. Your executable should neither read/write from another file, nor it should delete/create some other file.
- All three arguments should be read from the command line.
- The executable should be runnable in polynomial time. The function should work as intended.
- A readme on how to run this elf. This readme will be shared to blue teams (make sure no extra information is leaked). Only one elf and one readme has to be submitted.
- Your executable can only print one of two things:
    - Correct output of the function which is asked to implement

    - Some error messages like "wrong password", "not valid inputs", etc. that makes sense to the blue team.

- Moreover, If the blue team is running your executable with the correct sequence and range of inputs (as you asked in your readme), then it should print something to the output.
- A report explaining your solution or C code you used to generate the elf (for reference of TAs only)
- Every team gets 10 points after they submit a valid elf in the first part.
- Deadline - 11:59pm 12 April 2022

Assignment 7 - Alohomora - (Blue team part):-

1) Here, all teams are blue teams. All red team submissions will be available to everyone.

2) For every executable you break you get +x points. -x points will be given to the team whose executable you broke. X will be decided on time of submission

Submission Details:-

- Each team will get only 5 chances of submitting a function - elf combination.
  Wrong guess = 0
  Correct guess = +x
- Teams will submit a form every time with function-elf combination. Team won't be informed if their guess was correct or not. Teams will only be notified in a case if that elf has already been broken 10/x times.
- Each elf can be broken at max 10/x times. FCFS. All the teams will be notified about the elf if it has been broken 10/x times.
- Deadline - 11:59pm 24 April 2022

Functions

Function	**Input**	**Output, print “inputs not valid” if inputs are not valid**
Average	x,y	Ceil(mean of x,y)
Addition	x,y	x+y
Subtraction	x,y	x-y
Multiplication	x,y	x*y
Division	x,y	x/y
Modulus	x,y	x%y
XOR	x,y	x^y
OR	x,y	x|y
AND	x,y	x&y
Log	x,y	Ceil(log_x(y))
gcd	x,y	gcd(x,y)
Lcm	x,y	lcm(x,y)
Power	x,y	x^y
Factorial	n,r	(n+r)!
Get n choose r	n , r (r<=n)	n choose r
Get n P r	n , r (r<=n)	n P r
Max	x,y	max(x,y)
min	x,y	min(x,y)
Fibonacci sum	k1,k2	Get sum of (k1)th and (k2)th Fibo number
Padovan sum	K1, k2	Get sum of (k1)th and (k2)th Padovan number P(0) = 1
Get prime factors of integer	n, r	Get r th prime factor of n, when all the prime factors are sorted

Factor power	n,r	Number of times n is divisible by r
Largest prime	k1,k2	Largest prime in (k1*k2)
Modular Inverse	n,p	
Common primes	k1,k2	Number of common primes in factorisation of k1 and k2
sieve	n,r	r th prime after n
Sum of sums	K1, k2	Sum of first k1 natural numbers + sum of first k2 natural numbers
Multiplicative order	A,N	https://www.geeksforgeeks.org/multiplicative-order/

Assignment Analysis -

- Max Marks - (10+)
- Min Marks - (-10)
- The earlier you start, the more easy options you have.