NOVA CTF {2023} - Co-Ordinates
[REVERSE ENGINEERING CHALLENGE]

Given Description:

Ethan, three days ago agent Lindsey Farris was captured while on a surveillance operation.
This is the man she was tracking. His name is Owen Davian.
Details are eyes only but I can't tell you that Davian's a black-market trafficker.
Extremely dangerous and a priority for us. At 1400 hours today, a recon satellite
ID'd a caravan of vehicles with plates matching those known to have been used by Davian's operatives.
They stopped in a derelict factory outside Berlin. It appears they have a hostage.
We believe it is agent Farris. Normally we would disavow, but Lindsey may be the key to getting us closer to Davian and that's a risk we need to take. Your mission, should you choose to accept it, is to find Lindsey and bring her home.
I've already assembled the team. I have them standing by awaiting your word.
This message, lets call her my excellent engagement gift to you, will self-destruct in five seconds.
Good luck, Ethan and thanks again.

Solution:

The given code for the challenge is:

```
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char *argv[])
{
	char key[20];
	printf("Enter The Secret Code find the co-ordinates of Lindsey Farris: ");
	fgets(key,20,stdin);
	printf("\nLocation: ");
	if(key[1]==0x52)
	{
		printf("NO");
		if(key[2]==0x52)
		{
			printf("NOVA{Mission_Failed!!}");
			exit(0);
		}
		else if(key[2]==0x45)
		{
			printf("VA");
```

```
if(key[3]==0x55)
{
	printf("{3");
	if(key[5]==0x42)
	{
		printf("x");
		if(key[9]==0x20)
		{
			printf("pl");
			if(key[10]==0x42)
			{
				printf("0d");
				if(key[13]==0x4c)
				{
					printf("3");
					if(key[14]==0x49)
					{
						printf("d}");
					}
					else
					{
						exit(0);
					}
				}
				else
				{
					exit(0);
				}

			}
			else
			{
				exit(0);
			}
		}
		else
		{
			exit(0);
		}
	}
	else
	{
		exit(0);
	}
```

```
                        }


                        else
                        {
                                exit(0);
                        }
                }
        }
        return 0;
}
```

Using any reverse engineering tools such as: Ghidra, IDA, etc will make you analyse the steps involved in multiple if conditions.

On decoding the hex value of all if conditions you get the key as:
Key: KREUZBERG BERLIN -

Solving it - the flag is NOVA{3xpl0d3d}