Assignment – 7

Q1) Data Centres and their Security measures:

1: Pionen White Mountains, Sweden :

This data center was originally a military bunker and nuclear shelter during the Cold War era. It is 100 feet underground i.e. located below 30 meters of solid bedrock and is designed to be able to withstand a near hit by a hydrogen bomb. A 40-cm thick steel door provides the only way in or out of the facility which makes it secure even from nuclear attacks. Backup power is handled by two Maybach MTU diesel engines producing 1.5 Megawatt of power which has enough power to keep the servers running for some time so that data is not lost.

2: The Bunker, United Kingdom:

The data center is secured by barbed wires as well as attack dogs and ex-military security guards as well as encryption and authentication is used where possible to reduce chances of breach. Also the persons working are closely monitored so that they don't leak any info. The data center is secure against nuclear, biological as well as chemical attacks. Its buildings are hardened against Emp which are electromagnetic pulses released during nuclear blasts. It has generators which can keep it running for three months by themselves. The bunker is underground with heavy security in and out so that no one can enter the data center. Also the data center has a record of no physical breach till date. There are metal doors which are blast proof as well as safe from chemical and biological warfare.

3: DC1-Stavanger, Norway:

The data center is located in a highly-secure bunker that was earlier a NATO ammunition storage facility. It is buried 1,150 feet beneath a mountain, Under 100 m of granite which helps it in protecting it from emp and radiation as these are a major threat for these servers as it can disrupt those electronics . Built to military specifications, DC-1 is accessible only by tunnels that run deep underground and is protected by 50 cm thick steel blast doors. DC1-Stavanger has multiple grid supplies each fed from multiple hydro electricity power plants. Outstanding robustness of supply is the result (estimated 99.99997%) with even further additional levels of security in terms of N+1 prime rated generators

Q2)
Code:

```
#include<stdio.h>
typedef struct node{
        char alpha;
        int val;
};
```

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```
void swap(node &a,node &b){
	node temp;
	temp.alpha = a.alpha;
	temp.val = a.val;
	a.val = b.val;
	a.alpha = b.alpha;
	b.val = temp.val;
	b.alpha = temp.alpha;
}

void sort(node *sol){
	for(int i=0;i<25;i++){
		for(int j=0;j<25-i;j++){
			if(sol[j].val < sol[j+1].val )
				swap(sol[j],sol[j+1]);
		}
	}
}



int main(int argc, char *argv[]){
	int x = 0;
	char c;
	FILE *f;
	f= fopen ("a.txt", "r");

	node sol[26];
	for(int i=0;i<26;i++){
		sol[i].alpha = i+'a';
		sol[i].val = 0;
	}
	while(1)
   {
     c = fgetc(f);
     if(c==EOF)
        break;
     else
        if(c >= 'a' && c <= 'z')
				sol[int(c - 'a')].val++;
```

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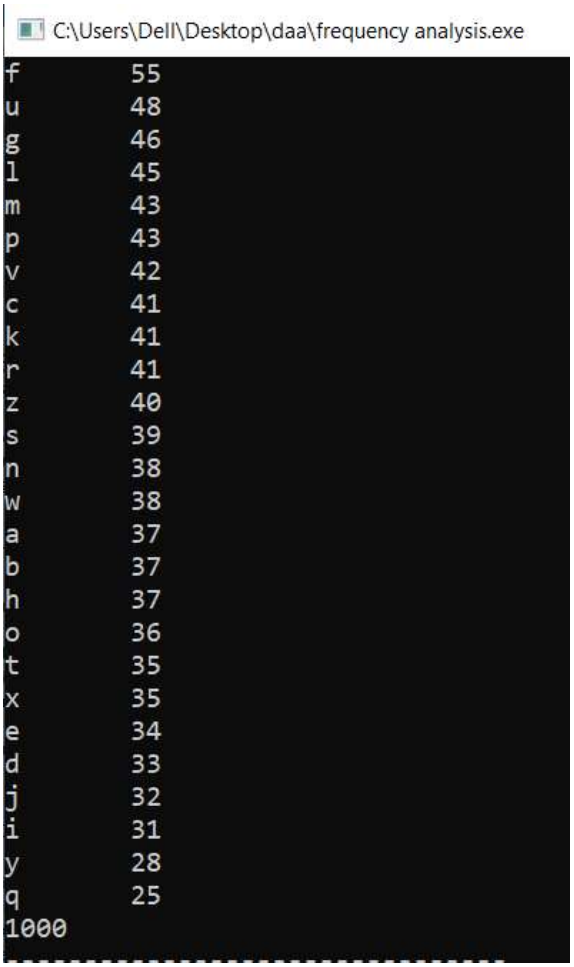
```
                        else if(c >= 'A' && c <= 'Z')
                        sol[int(c - 'A')].val++;
    }
    fclose(f);

        sort(sol);
        int count = 0;
        for(int i=0;i<26;i++){
                printf("%c       %d\n",sol[i].alpha,sol[i].val);
                count += sol[i].val;
        }
        printf("%d",count);


}
```

- **In this file I am inputting using a file called a.txt where the test is stored**



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