DATA COMMUNICATION
AND
COMPUTER NETWORKS
LAB RECORD

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BATCH: B6(HONS)

LAB TASK 1

Signal rate calculation

CODE:

```c
#include<stdio.h>
#include<math.h>
#include<stdlib.h>
int main()
{
float c = 0.5;
float N = 1000,temp;
float ratio, SR ;
for(int i = 0;i<10;i++)
{
    ratio = rand()%(8+1-1)+1;
    temp = (float)(1/ratio);
    SR = (c * temp* N );
    printf("for value r= %f\n",ratio);
    printf("Signal rate: %f bauds\n", SR );
}
}
int main()
{
    float c ; float N; int r ; float S;
    printf("Enter case factor: \n");
    scanf("%f",&c);
    printf("Enter data rate: \n");
    scanf("%f",&N);
    printf("Enter signal element: \n");
    scanf("%d",&r);
    S = (c * N * (1/r));
    printf("Signal rate: %f bauds\n", S );
}
```

OUTPUT:

```
PS C:\Users\91766\Desktop\ \500082638-PRAKRATI SINGH-DCCN\Lab> gcc LAb1.c
PS C:\Users\91766\Desktop\ \500082638-PRAKRATI SINGH-DCCN\Lab> ./a
for value r= 2.000000
Signal rate: 250.000000 bauds
for value r= 4.000000
Signal rate: 125.000000 bauds
for value r= 7.000000
Signal rate: 71.428574 bauds
for value r= 5.000000
Signal rate: 100.000000 bauds
for value r= 2.000000
Signal rate: 250.000000 bauds
for value r= 5.000000
Signal rate: 100.000000 bauds
for value r= 7.000000
Signal rate: 71.428574 bauds
for value r= 7.000000
Signal rate: 71.428574 bauds
for value r= 3.000000
Signal rate: 166.666672 bauds
for value r= 1.000000
Signal rate: 500.000000 bauds
```

Calculating channel capacity

CODE:

```c
#include<stdio.h>
#include<math.h>
#include<stdlib.h>
int main()
{
float c = 0.5;
float N = 1000,temp;
float ratio, SR ;
for(int i = 0;i<10;i++)
{
    ratio = rand()%(8+1-1)+1;
    temp = (float)(1/ratio);
    SR = (c * temp* N );
    printf("for value r= %f\n",ratio);
    printf("Signal rate: %f bauds\n", SR );
    int BW; double Lvl ; float r;
    printf("Enter Bandwidth: \n");
    scanf("%d",&BW);
    printf("Enter number of Levels: \n");
    scanf("%lf",&Lvl);
    r = (2*BW* (log2(Lvl)));
    printf("Channel Capacity: %f bps\n", r );
}
}
```

OUTPUT:

```
PS C:\Users\91766\Desktop\ \500082638-PRAKRATI SINGH-DCCN\Lab> gcc Lab1.c
PS C:\Users\91766\Desktop\ \500082638-PRAKRATI SINGH-DCCN\Lab> ./a
for value r= 2.000000
Signal rate: 250.000000 bauds
Enter Bandwidth:
300
Enter number of Levels:
4
Channel Capacity: 1200.000000 bps
for value r= 7.000000
Signal rate: 71.428574 bauds
```