

SEM-6-PRACTICALS-DIGITAL IMAGE PROCESSING

Image Compression

A. Arithmetic coding(Image Compression technique).

Code:

```
//arithmetic coding
clc;
n=input("Enter the no. of symbols : ");//Input: Taking the no. of symbols
//Note:The sum of probabilities of all symbols must be one(1)
for i = 1:n
    printf("\nEnter the probability(<=1) of symbol %d: ",i);//Input: Take
    p(i)=input("");
end
//Sample Input for probability of symbols
// Symbol          Probability
//   1              0.3
//   2              0.25
//   3              0.25
//   4              0.1
//   5              0.   1
printf("\nThe cdf of symbol 1: %.3f ",p(1));
//Output CDF for example input
// Symbol          CDF
//   1              0.3
//   2              0.550
//   3              0.800
//   4              0.900
//   5              1.000

c(1)=p(1);
for i = 2:n
    c(i)=p(i)+c(i-1);
    printf("\nThe cdf of symbol %d: ",i);
    printf("%.3f",c(i));
```

```

end
s=input("Enter the no. of symbols in sequence");//Input: No. of symbols
//ex No. of symbols in sequence=5
printf("Enter the sequence ");// Input: Sequence(For example to enter t
//Input ex Sequence: 1 (press Enter)
//                2 (press Enter)
//                3 (press Enter)
//                2 (press Enter)
//                1 (press Enter)
for j = 1:s
b(j)=input("");//Inserting the sequence
end
//Setting the lower and upper limit for 1st stage
if b(1) == 1 then
l(1)=0;
u(1)=c(b(1));
else
l(1)=c(b(1)-1);
u(1)=c(b(1));
end
//Calculating lower and upper limits for 2nd stage and ahead
for k = 2:s
if b(k) == 1 then
l(k)=l(k-1);
u(k)=l(k-1)+((u(k-1)-l(k-1))*c(b(k)));
else
l(k)=l(k-1)+((u(k-1)-l(k-1))*c(b(k)-1));
u(k)=l(k-1)+((u(k-1)-l(k-1))*c(b(k)));
end
end

tag=(l(s)+u(s))/2;//Generating tag
printf("The tag of the sequence is= %.10f",tag);//Output: The tag of th
//Output for ex tag=0.1375781250

```

Output:-

B. Run Level Coding (Image Compression Technique).

Code:

```
//Run Length Coding  
clc;  
clear;  
in = [ 1 0 0 1 0 0 0 ]  
disp(in);  
[m, n ] = size (in);
```

```
y= 0;
tx(1)= 0;
o = 1;
for j = 1:m
    for k = 1:n
        x = in (j,k);
        if x==y
            tx(o) = tx(o)+1;
        else
            o = o+1;
            tx(o) = 1;
        end
    end
y= x;
end
end
disp(tx);
disp('0 is an index value');
```

Output:-

Practical 1

Practical 2

Practical 3

Practical 4

Practical 5

Practical 6

Practical 7

Practical 8

Practical 9

Practical 10

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