Notes for Discrete math UTS midterm exam:

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1. How many subsets are there in a set of T elements?

2T

2. Order the logical operations OR, AND, NOT.

NOT, AND, OR

3. Is this function (0, 0), (1, 1), (4, 2), (9, 3), (4, -2)? Why?

No, because (4, 2) and (4, -2) are not allowed.

4. Compare truth tables of implication, conversion, inversion, contraposition.

Implication = contraposition

Conversion = inversion

5. Calculate number of permutations P(T,L).

6. In how many ways you can write the digits of your k?

D!

7. Find Highest Common Divisor and Lowest Common Multiple of e+4 and L+4.

Use minimum and Maximum of powers of the prime factors.

8. Convert T to e+2 and L+2 counting systems.

s = 23123456

T = s mod 100

L = s mod 10

e = s mod 8

n = T

b = L+2

d1 = n Mod b ^ 1

MsgBox d1

d2 = (n Mod b ^ 2 - d1) / b ^ 1

MsgBox d2

d3 = (n Mod b ^ 3 - b ^ 1 \* d2 - d1) / b ^ 2

MsgBox d3

d4 = (n Mod b ^ 4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 3

MsgBox d4

d5 = (n Mod b ^ 5 - b ^ 3 \* d4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 4

MsgBox d5

d6 = (n Mod b ^ 6 - b ^ 4 \* d5 - b ^ 3 \* d4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 5

MsgBox d6

d7 = (n Mod b ^ 7 - b ^ 5 \* d6 - b ^ 4 \* d5 - b ^ 3 \* d4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 6

MsgBox d7

'd8 = (n Mod b ^ 8 - b ^ 6 \* d7 - b ^ 5 \* d6 - b ^ 4 \* d5 - b ^ 3 \* d4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 7

'MsgBox d8

'd9 = (n Mod b ^ 9 - b ^ 7 \* d8 - b ^ 6 \* d7 - b ^ 5 \* d6 - b ^ 4 \* d5 - b ^ 3 \* d4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 8

'MsgBox d9

'd10 = (n Mod b ^ 10 - b ^ 8 \* d9 - b ^ 7 \* d8 - b ^ 6 \* d7 - b ^ 5 \* d6 - b ^ 4 \* d5 - b ^ 3 \* d4 - b ^ 2 \* d3 - b ^ 1 \* d2 - d1) / b ^ 9

'MsgBox d10

Question:

Give prime factorization of s.

9. Calculate the largest prime number you can.

n = 13

For i = 2 To Int(Sqr(n))

If n Mod i = 0 Then GoTo 1

Next i

MsgBox "prime"

GoTo 2

1 MsgBox "not prime"

2 Label2 = 2

10. Give the histogram of tossing L+2 fair coins, the first e+3 digits of π.

0:1

1:1

0:1

1:2

2:1

0:1

1:3

2:3

3:1

1

11

121

1331

3.141592654

0:0

1:2

2:1

3:1

4:2

5:2

6:1

7:0

8:0

9:1

11. Give the histogram of adding random between e+2 times.

Use Excel

12. Solve the Graceful Graph Problem for *(e+3)* vertices.

(0,1), (1,3), (0,3)

(5,6), (0,2), (2,5), (2,6), (0,5), (0,6)

(8,9),(0,2),(2,5),(5,9),(0,5),(2,8),(2,9),(0,8),(0,9)

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http://azspcs.com/Contest/GracefulGraphs