Online Programming Test (Advanced) preparation for Recruitment at Samsung R&D Institute Bangladesh Ltd.

Pre-Employment Test Guideline

General Guidelines:

[Note: This is given by HR when you select for advance test]

- Candidates shall be invited through email, text message, and phone call from SRBD HR only
- Please read invitation email and guideline carefully
- You are requested to reach the test venue 30 minutes before test start on test day
- Any types of electronic devices, such as but not limited to, Laptop, tab, and removable hard disk, camera are strictly prohibited to bring at test venue; you may carry mobile phone along with you only, and SRBD Security will put sticker on camera. Please do not remove camera sticker until you exit from SRBD Premises, otherwise, your test will be cancelled.
- Since SRBD is an R&D center therefore, guests/ friends/ relatives are not usually welcome. Parents may be allowed to wait at the reception for those candidates who come from another districts/ there are security issue.
- Any types of papers, books, USB, and Bags shall be kept out of test venue; SRBD Security may take away and keep them in their custody.
- You should enter into the test venue 15 minutes earlier of the test start time, doing the entrance formalities and SRBD security will assist you.
- Candidates are requested to listen carefully to HR instructions before test and act accordingly. Any types of misbehaver and unfair means shall be treated as cancelation of the test
- During the test, you should raise your hands for any types of assistance; question related queries will not be responded but technical issues shall be resolved with the help of concerned IT Infra team members
- You are requested to leave test venue immediately after you complete test and Invigilator taking attendance signature along with other closing formalities.
- Please be noted that you are not allowed to go to any other workstation/places/ cafeteria/ playing zone/ prayer rooms without consent of HR Personnel

o You will be under the pledge not to discuss about questions and solving strategy techniques before/ during / after the test in office premises with anybody/ SRBD employees.

o You are requested not to share any questions/tips in social network sites

o You may contact only with HR personnel for further queries

Test Related Tips: Pre-Employment Advanced Level

o Learn how to work with Visual Studio for "c" and "cpp" coding, and Eclipse for coding with Java.

o Practice solving problems with only <stdio.h> and <iostream> headers, while implementing required algorithms yourself.

o Practice solving problems with brute force as optimization is usually not required in this level of the exam, and given memory is plenty (usually 256MB to 1GB).

o Some important topics to practice are:

a. Recursion (Brute Force):

i. Permutation: O(n!) solution to problems.
ii. Combination: O(nCr) solution to problems.
iii. Subset: O(2n) solution to problems.
iv. Simulation: Variable time complexity.
1. Board game simulation
2. Job scheduling simulation
3. Rotating/Reflecting/Copying 2D Array simulation

b. Graphs:

i. Graphs represented with 2D Array
ii. DFS
iii. BFS: Queue implementation might be required.

c. Basic algorithms:

i. O(n2) array sorting.
ii. Queue/Stack data structures.
iii. Successive sums
iv. Any algorithms you can find which are not hard to implement or do not require any concept.

- Some websites to practice problems are:

a. www.codeforces.com

b. www.hackerrank.com

c. www.lightoj.com

d. www.a2oj.com (A, B and C Ladders)

Some tips from persons who give Samsung r&d advance test

1. Most of case it thinks that using visual studio is not major problem. But actually it is a great problem for first time using. So takes it seriously. There are lot of programmers exclude in online advance test in first time because of that problem. You can also use their online compiler platform. But it so tough to debug in online compiler platform. So it is preferable to use visual studio.

2. In c and c++ you only work with header either <stdio.h> or <iostream>. So you can not use any build in function which is not contain in this header. The main is handling the string because you can not able to using <string.h> header.

3. The main advantage , you may not need to think about time complexity optimization or memory optimization. But you have to handle all the corner case. Handling corner case is very much important in online advance test. So any bad solution with all corner case handling will be passed.

4. You have only one problem and you have to solve it in 3 hours. How much time you submit the solution is given in the problem set. Maybe it is 10 times or 5 times. There are 10 or 50 or more test cases. It is vary. You remember that no partial marking is available. So you have to solve the problem for full data set. If you able to solve for full data set then you will be passed otherwise you will be failed.

5. Normally contest programmer can use any type of book or notes. But in Samsung r&d advance test you can not use these. It is strictly prohibited. They give you pen and piece of paper.

6. You must be remember that you only able to give online advance test 3 times and between in 2 months. So you apply for online advance test only when you are confidence with yourself.

7. If you apply for online advance test by their circular then your cgpa is much be greater than 3.0 . But if you attend their programming contest and able to show a good performance then cgpa is not factor. The hr directly email you for online advance test.

8. **It is the most important point. You must have to good knowledge in recursion and backtracking. You should to be confident you can solve most of common dynamic problem using recursion.**

Some common problems which come in Samsung r&d advance test:

Problem 1(complete search + backtrack):

1	0	2	1	2
2	0	0	1	1
1	1	1	0	2
1	1	1	0	2
1	1	0	0	2
1	0	2	1	0
2	0	2	2	0
0	0	2	2	1
0	0	1	2	1

		biman		

Suppose you play a game in mobile. The display size of the mobile define 5*5 array. The blue boarder defines the screen. The number 1 defines the friend and the 2 define the enemy and 0 defines the empty cell. You can shift the biman either one column left side or one column right side or do not shift(as you want). And in every second all row go to their down row and the last row go to the row where biman exist. If the biman touch with his friend then one point increase and if the biman touch with enemy then one point decrease and if biman touches with empty cell then nothing change. Suppose in first second biman in the middle position. Then in 2nd second the biman able to move either right one cell or left one cell or do not move and the last row also come to row where biman exist. So in 2nd second if biman move to left cell the score of the biman is 0, if move to right cell then biman score is -1 and if the biman is not move then the score is +1.

1	0	2	1	2
2	0	0	1	1
1	1	1	0	2
1	1	1	0	2
1	1	0	0	2
1	0	2	1	0
2	0	2	2	0
0	0	2	2	1

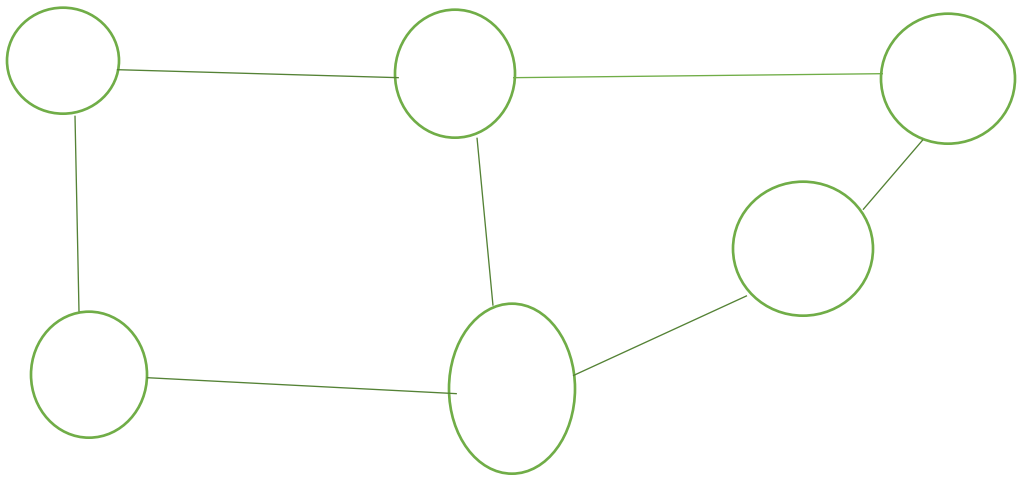
+1

0	0	1	biman	2	1

The biman also can able to fall a bomb in the only one time. When the bomb is fall the all enemy is died and the enemy cell become empty. Remember the bomb only works for the display part and biman can fall bomb only one time. If the anytime biman score is -1 then the biman is destroyed. So after -1 no calculation occurred.

If you have given a n*5 array. If you have to find how much maximum coin can be possible to collect after completing this whole work. You have to output the maximum coin which you can be earned and if not possible then print -1.

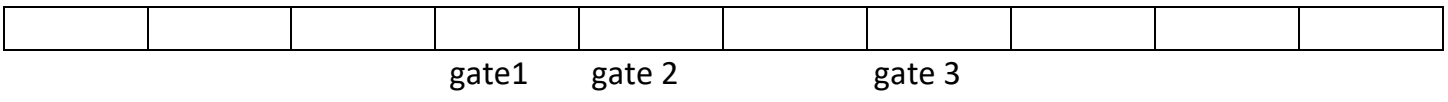
Problem 2(Basic DFS concept):



You have two color white and black. You have to color every node. Two adjacent node color must be different. If you color a node as white then the other node which is connected with that node must be colored as black.

You have given how much node and how much edge. Then there are edge number pair where every pair define which node is connect with which node. You have to print all the node which you color as white. If not possible than print -1.

Problem 3(may be permutation and combination not sure)(The problem I can not remember but may be that type):



Some people enter the table by using gate. Some people use gate 1, some people use gate 2 and other use gate 3. The people who use gate 1 they want to near to the gate 1, also the people who use gate 2 also want near to gate 2 and same for gate 3. In every cell there are maximum one people. The distance between gate and people are define by how much cell is exist between them.

You have given how much cell exist, the number of people who use gate1 and the number of people who use gate2 and the number of people who use gate3. You have to print minimum distance use by total people.

Some problem which is helpful for pass the advance test:

1. https://codingcompetitions.withgoogle.com/codejam/round/0000000000051635/0000000000104e03
2. http://poj.org/problem?id=3176
3. http://lightoj.com/volume_showproblem.php?problem=1047
4. http://lightoj.com/volume_showproblem.php?problem=1231
5. http://lightoj.com/volume_showproblem.php?problem=1004
6. http://lightoj.com/volume_showproblem.php?problem=1057
7. https://uva.onlinejudge.org/index.php?option=com_onlinejudge&Itemid=8&category=24&page=show_problem&problem=691 (Great problem for understand recursion)
8. https://uva.onlinejudge.org/index.php?option=com_onlinejudge&Itemid=8&category=24&page=show_problem&problem=1004
9. http://lightoj.com/volume_showproblem.php?problem=1232
10. http://lightoj.com/volume_showproblem.php?problem=1051
11. http://poj.org/problem?id=3181
12. https://uva.onlinejudge.org/index.php?option=com_onlinejudge&Itemid=8&page=show_problem&problem=503
13. https://www.hackerrank.com/domains/algorithms?filters%5Bsubdomains%5D%5B%5D=recursion (You can try these problems)

These problems are for understanding recursion.

But it is very much need to case handling. For case handling try to solve different raw problems in different online judge. At least try to solve codeforce number a or number be upto 30 or can try to solve introduction problem in uva online judge.

Happy Coding…….