**Round 1 : Written test**

C output prediction 10 one mark qns and 5 two mark qn.

2 mark qn:

1. Predict the output of following program

#include<stdio.h>

int main(){

int arr[10],I;

for(i=0; i < 10; i++){

arr[i] = 9-i;

}

for(i=0;i<10;i++){

arr[i] = arr[arr[i]];

}

for(i=0; i<10; i++){

printf("%d",arr[i]);

}

}

General aptitude 10 one mark qn.

1. Two pipes fill a tank in 1hr30 min and 40 min each. Another pipe empties it in 30 min. How long does it take to fill the tank if all the pipes are open?
2. There are 11 pairs of white socks, 11 pairs of black socks and 10 pairs of blue sock. How many socks should one take such that one finds

**Round 2: Short Programming**

1. A robot is at position (x,y). It can move Up(U), Down(D), Right(R) and Left(L). Given the moves and initial position, find the final position of the robot.

Input: (2,3)

R10U4U4D3

Output:

1. Check whether a number is Armstrong number or not. A number is Armstrong if the sum of pow(digit, length) is the number itself.

Input:

1. Given a array, find all possible subsets.

Input: 1 4 2

Output: {}, {1}, {4}, {2}, {1,4}, {1,2}, {4,2}, {1,4,2}

1. A file contains matrix as shown below

1 4 5 3

2 1 6 9

4 2 1 4

Sort the rows based on kth column and print the output to another file.

1. Given a string reverse all the vovels.

Input: **E**d**u**c**a**t**io**n

Output: **o**d**i**c**a**t**uE**n

1. .

**Round 3: Advanced Programming**

You are required to develop a banking application with the following features. Develop a design and code the in order.

1. Initialization :

The details of customers are in a file “bank\_db.txt”. Initialize the bank application by reading the customer details from the file. The contents of the file is as follows

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CustID** | **AccountNo** | **Name** | **Balance** | **Password** |
| 101 | 2400 | Arun | 20000 | avCe34cs |
| 203 | 2500 | Prakash | 15000 | geAA3A |
| 222 | 4200 | David | 40000 | Zrf3K |
|  |  |  |  |  |

1. Add new customers:

Customers input name and password. Generate unique customer id and account no.

The application must prompt the user to re type the password and must make sure that it same.

1. Encryption:

Saving the password as plain text is not a good option. So encrypt the password and don’t use plain text password. Encryption scheme used is simple and the rules are

* Shift all letters by one position. Replace ‘A’ by ‘B’, ‘B’ by ‘C’ and so on… Replace ‘Z’ by ‘A’. Do the same for all small letters.
* Shift all digits by one position. Replace ‘0’ by ‘1’, ‘1’ by ‘2’ and so on.. Replace ‘9’ by ‘0’.

1. Authentication:

User must be authenticated before accessing his account. User provides only the plain text password. It must be compared with the encrypted password.

1. Basic ATM operations

The application must provide the following operations.

* Deposit
* Withdraw
* Transfer amount to other account.

The customer must maintain a minimum balance of Rs.1000.

1. Persistence:

The application must save data in file so that during the next run the customer details are not lost.

1. Transaction History:

All transactions must be recorded. Sample transaction history for a customer is given below

Account No: 2322

Name : Raju

Transaction History

|  |  |  |  |
| --- | --- | --- | --- |
| Transaction ID | Transaction Type | Amount | Balance |
| 1 | Opening | 10000 | 10000 |
| 2 | ATM Withdrawal | 100 | 9900 |
| 3 | Deposit | 100 | 10000 |
| 4 | Transfer to 3440 | 100 | 9900 |

Transaction ID must be incremented for each transaction.

For account transfer transaction history must be in both accounts.

1. Change password and Old Password

The application must allow user to change password.

The application must keep track of last three passwords. User cannot use last three passwords.

1. Password Strength

Password must have

* At least two lower case alphabets.
* At least two upper case alphabets.
* At least two digits.

1. Force Password Reset

For security reasons after 10 transactions user must be forced to change the password.

1. Operation fee

For amount transfers more than Rs 5000, an operational fee of Rs10 is debited from account from which amount is transferred?

1. .
2. .