

# January 2023 CSE 108

## Online 1

Time: 30 minutes

Subsections C1 & C2

You need to implement a Bank Account Management System using basic OOP concepts. The system includes the account holders of the bank, and an instance of the bank itself.

### Tasks

1. Create a class named **BankAccount** for the account holders. The class will have private member variables for the account holder's name, the accountNumber (a string) and the balance in the account. For storing strings, you can use the C++ `<string>` library if convenient.
2. Include public member functions to:
  - Set the account details.
  - Get the account details.
  - Display the account details.
  - Deposit a fixed amount to the account.
  - Withdraw a fixed amount from the account.
3. Implement the appropriate constructor(s) and destructor for the BankAccount class.
4. Create a class named **Bank** that manages the collection of bank account holders.
5. Include private member variables to store the account holders [use arrays with a maximum specified size (for example: 100)].
6. Include public member functions to:
  - Register a new account to the bank.
  - Display all the registered accounts' details.

Including the following would be regarded as **Bonus (+20%)**:

- Remove an existing account from the bank.
7. Implement the appropriate constructor(s) and destructor for the Bank class.

See the expected outputs below to have a clear understanding.

## Sample main()

```
int main() {
    Bank bank;

    // Add new bank accounts
    bank.addAccount("12345", "John Doe");
    bank.addAccount("67890", "Jane Smith");

    // Perform transactions
    bank.deposit("12345", 1000.0);
    bank.deposit("67890", 500.0);

    // Display account details
    bank.displayAllAccounts();

    // Perform transactions
    bank.withdraw("12345", 200.0);
    bank.withdraw("67890", 500.0);

    // Display account details after transaction
    bank.displayAllAccounts();

    // Remove an account
    bank.removeAccount("67890");

    // Display account details after removal
    bank.displayAllAccounts();

    // Add more accounts
    bank.addAccount("24680", "Sarah Adams");
    bank.addAccount("13579", "Michael Lee");

    // Perform transactions on the newly added accounts
    bank.deposit("24680", 1500.0);
    bank.deposit("13579", 200.0);

    bank.withdraw("13579", 100.0);
    bank.withdraw("24680", 300.0);

    // Display all accounts
    bank.displayAllAccounts();

    return 0;
}
```

## Expected Output

Registered Accounts:

Account Number: 12345  
Account Holder: John Doe  
Balance: \$1000

Account Number: 67890  
Account Holder: Jane Smith  
Balance: \$500

Registered Accounts:

Account Number: 12345  
Account Holder: John Doe  
Balance: \$800

Account Number: 67890  
Account Holder: Jane Smith  
Balance: \$0

Account 'Jane Smith (67890)' removed successfully.

Registered Accounts:

Account Number: 12345  
Account Holder: John Doe  
Balance: \$800

Registered Accounts:

Account Number: 12345  
Account Holder: John Doe  
Balance: \$800

Account Number: 24680  
Account Holder: Sarah Adams  
Balance: \$1200

Account Number: 13579  
Account Holder: Michael Lee  
Balance: \$100