# C++ Assignments

## Topic: Basics of C++

1. WAP to check whether given number is palindrome or not. Make use of pure c++ standard I/O functions and header.
2. WAP to sort given array in ascending and descending order. Make use of any one of the sorting algorithms.
3. WAP to swap the values of 2 numbers without using third variable.
4. WAP to find sum of 2 integers without using '+' operator.

## Topic: Object Oriented Programming

1. Define a class batsman with the following specifications and create 5 players as object and display the details of each:

| **Private Data Member and Functions** | |
|---|---|
| Member Name | Description |
| batsmanNum | 4 digits code number |
| batsmanName | 20 characters |
| Innings | Number of innings played |
| notout | Number of notout |
| runs | Total number of runs scored |
| batAvg | Average of batting |
| calculateAvg() | Function to calculate batting average. Formula for calculating average:<br>batAvg = runs/(innings-notout) |
| **Public Members** | |
| readData() | Function to accept values for batsmanNum, batsmanName, Innings, notout, runs and invoke calculateAvg() |
| displayData() | Function to display the details of batsman. |

## Topic: Constructors and Destructors

1. WAP to illustrate ATM machine. The ATM class should have the following members and specifications.

| Private Data Member and Functions | |
|---|---|
| Member Name | Description |
| cardNum | Const 9 digit Account number of customer |
| customerName | Customer name |
| balance | Balance in the account |
| Pin | 4 digit pin |
| Public members | |
| checkBalance() | Function to display the balance amount |
| Withdraw() | Function to withdraw the money |
| changePin() | Function to change the pin |

- Create a customer and initialize the values of all private data members with constructor
- Following are the working of ATM machine:
    - Display the following option to customer
        - Check Balance
        - Withdraw
        - Change Pin
        - Exit
    - After user make the choice ask him to enter the pin and evaluate whether the entered pin number matches with the original.
    - If matches proceed the choice else display the error message and quit.
    - Whenever user makes withdrawal, reflect the balance amount.
    - For change pin option always ask him to enter the previous pin and new pin. And cross verify the

previous pin, if matches change the pin else error message.

## Topic: Inheritance

1. Write a program to demonstrate inheritance as follows:
    - Dhirubhai Ambani started Reliance with retail & textile segments with 1 Billion networth
    - Mukesh Ambani inherited it and added petroleum segment. Made 10 Billion networth
    - Akash Ambani inherited it and added JIO segment. Made 90 Billion networth
    - Add methods to print various owners, segments and networth values at different times
    - Use appropriate constructors and destructors if there is memory allocation.

2. Create 2 class with following description:
    - BasicInfo: Class contains following members
        - name:  of type char and length 20
        - empId: 3-digit number
        - gender: gender of the employee as ‘m’,‘f’,’t’
        - getBasicInfo() : Function to display the basic information of employee.
    - DeptInfo: Class contains following members:
        - deptName: Name of the department (30-character)
        - assignedWork: type of character and size is 30
        - timeToComplete: time in hours

    - getDeptInfo(): function to display the information about department.
- Employee: Class should work as given below
    - Add details of 5 employees with basic info and department info
    - Display the information of all the 5 employees.
    - Use constructors and destructors if required. Handle the memory allocation and deallocation properly.
    - Use proper inheritance as required.