Military Institute of Science & Technology
Department of Computer Science and Engineering
CSE 206: Object Oriented Programming Language Sessional
CSE – 19, Level – 2, Term – I, Online 01
Date – 20 January 2021

Total Marks : 25 **Time: 1 hour 15 Minutes**

Name:	**ID:**

Gringotts Wizarding Bank is the only bank of the wizarding world, and is owned and operated by goblins. According to Rubeus Hagrid, other than **Hogwarts School of Witchcraft and Wizardry**, Gringotts is the safest place in the wizarding world. In addition to storing money and valuables for wizards and witches, one can go there to exchange muggle money for wizarding money.

You, being very curious about Gringotts, want to figure out how the interest scheme works for *wizards* and *goblins*. Because goblins also keep their valuables in the vaults of Gringotts. Design two classes "**Goblin** (Bankers) and **Customers** with necessary attributes and methods. The classes should contain the following attributes.

Goblin	name	char *	store names of Goblin.
	designation	string	Goblins can be assigned with any of the 3 designations 1. *manager* - definitely has a personal vault at Gringotts. 2. *accountant* - also has a personal vault at Gringotts. 3. *coiner* (equivalent to *cashier* of a muggle bank) - these Goblins don't have any personal vaults.
	salary	double	*Managers* - 1000 gold coins *Accountant* - 600 gold coins *Coiners* - 300 gold coins
	object	Customer *	If the Goblin has a vault, his customer details will be stored in this object. Otherwise assign null.
	display(year)	void	displays **name**, **designation** and **total income** in specified year(s) of a Goblin.

	total_income(year)	double	if no vault at Gringotts:
			income = *salary* * *year*
			if has a vault at Gringotts:
			income = *salary* * *year* + ***interest(year)***

Customer	name	char *	store names of Customer.
	vault_no	integer	A unique number that indicates the vault assigned to the customer.
	rank	integer	indicates the rank of the customer. Can be of rank 1, rank 2 or rank 3.
	interest_rate	double	**7%** = *rank 1* **5%** = *rank 2* **3.5%** = *rank 3*.
	vault_balance	double	Initial deposit of the customer in Gringotts.
	total_balance(year)	double	balance = *vault_balance* * (1 + *interest_rate* * *year*)
	interest(year)	double	[interest = ***total_balance(year)*** - *vault_balance*
	display(year)	void	displays **name**, **vault_no** and **total balance** in specified year(s) of a Customer.
find_goblin(Goblin [], name, size)			
find_customer(Customer [], name, size)			

Sample Input and Output:

Customer and Goblin Details Input	**Menu Driven Output**
Enter number of Customers: 5 Enter Details: Name: Albus Dumbledore Rank: 1 Vault Balance: 10000 Name: Blordak Rank: 2 Vault Balance: 200 Name: Harry Potter Rank: 3 Vault Balance: 5000 Name: Bellatrix Lestrange Rank: 2 Vault Balance: 3500 Name: Griphook Rank: 1 Vault Balance: 4800 Enter number of Goblins: 3	See details of a Goblin/Customer: G Enter Name: Blordak Enter Year: 3 Name: Blordak Designation: Accountant Total Income: 1830 Gold Coins See details of a Goblin/Customer: C Enter Name: Bellatrix Lestrange Enter Year: 5 Name: Bellatrix Lestrange Valut No: 912 Total Balance: 3850 Gold Coins See details of a Goblin/Customer: C Enter Name: Griphook Enter Year: 2 Name: Griphook Valut No: 666 Total 0.Balance: 5472 Gold Coins

Enter Details: Name: Griphook Designation: Manager Name: Blordak Designation: Accountant Name: Snaglok Designation: Coiner	See details of a Goblin/Customer: G Enter Name: Griphook Enter Year: 2 Name: Griphook Designation: Manager Total Income: 2672 Gold Coins

Notes

1. Names of the Goblins and Customers will be unique and **not separated** by space.
2. If you use ***rand()*** to generate ***vault_no***, use ***srand(time(0))*** to set the seed.
3. Don't write any set() and get() methods in th"e class.
4. Write proper constructors and destructors where necessary.
5. You may use ***strcmp()*** to compare char arrays.