

Chapter 2

Task Sheet

Task 1:

Imagine a simple supermarket billing system which can specify orders and calculate the total price of ordered items. For the sake of simplicity, we work with oranges and bananas as our products. Oranges cost 5\$ per piece and bananas 4\$ per piece, respectively. Create a system that:

- Can calculate the total price given a number of oranges and bananas bought.
- Adds a different price for buying a specific amount of an item
- Make triplets of oranges cost 10\$ in total instead of 15\$
- Make 5 bananas cost 10\$ instead of 20\$
- Adds a discount of 10% to the total price for regular customers

Task 2:

Imagine you have 2 football teams and each team has an equal amount of players. Each player has both his first and last name written down as well as their age. Try to find the following things:

- 2 or more players with the same first or last name in the same team
- 2 or more players with the same first or last name across the two teams
- 2 or more players with the same first name and age in the same team

Task 3:

Imagine you have a simple Role playing game. You have a base character which can be specialized in different classes such as Warrior, Mage etc. Every character has a certain amount of hitpoints and has the ability to attack other characters.

- Create a system for characters who all have:

- Hit points and the ability to replenish them
 - The ability to attack other characters
- Allow a character to have a specific class
- Add a specific unique resource to every class (Warriors get fury, Mages get mana)
- Add a special unique attack to every class (Warriors get “Execute”, Mages get “Fireball” etc.)
 - These unique attacks spend the unique resource, respectively (e.g. Fireball costs 10 mana)
- Add the ability for every class to replenish their unique resource.

Task 4:

For some given text (for example your full name), write a procedure which:

- Prints the text in reverse order
- Prints the letters from the text in an alphabetical order
- Finds if there are duplicate letters in the text and if there are, list how many are duplicated (e.g. “Tommy” will give the result of 1, while “Christensen” has 3)