Task 3

Problem 1

Generate a random number between 1 and 100. Ask the user to guess the number, then tell them .whether they guessed too low, too high, or exactly right. (with limit of 7 trials)

```dart
import 'dart:io';
import 'dart:math';

void main() {
  Random random = Random();
  int num = random.nextInt(100) + 1;
  int attempts = 7;

  print('Welcome to the Guess the Number Game!');
  print('I have chosen a number between 1 and 100. Can you guess it?');
  print('You have $attempts attempts.');

  while (attempts > 0) {
    stdout.write('Enter your guess: ');
    try {
      int guess = int.parse(stdin.readLineSync()!);
      if (guess == num) {
        print(' Congrats! 🎉 The random number is $num.');
        break;
      } else if (guess > num) {
        print('Too high! Try a smaller number.');
      } else {
        print('Too low! Try a bigger number.');
      }
      attempts--;
      print('You have $attempts attempts left.');
    } catch (e) {
      print('Invalid input! Please enter a valid number.');
    }

    if (attempts == 0) {
      print('😢 You\'ve used all your attempts. The number was $num.');
    }
  }
}
}
```

Problem 2

Ask the user for a string and print out whether this string is a palindrome or not. A palindrome is .a string that reads the same forwards and backwards

```dart
import 'dart:io';

void main() {
  stdout.write('Enter the word:');
  String word = stdin.readLineSync()!;
  String reservedword = "";
  for (var i = word.length-1; i >= 0; i--) {
    reservedword += (word[i]);
  }
  if (word == reservedword) {
    print('word is a palindrome');
  }
  else{
     print('word is not a palindrome');
  }
}
```

Problem 3

– Write a password generator in Dart. Be creative with how you generate passwords strong passwords have a mix of lowercase letters, uppercase letters, numbers, and symbols. The passwords should be random, generating a new password every time the user asks for a new password. Include your run-time code in a main method

```dart
import 'dart:math';

void main() {
  print("generated Password: ${generatePassword(12)}");
}

String generatePassword(int length) {

  String upperCase = 'ABCDEFGHIJKLMNOPQRSTUVWXYZ';
  String lowerCase = 'abcdefghijklmnopqrstuvwxyz';
  String numbers = '0123456789';
  String symbols = r'!@#\$%^&*()-_=+[]{}|;:,.<>?';

  String CharsOptions = upperCase + lowerCase + numbers + symbols;
  Random random = Random();

  List<String> password = [];
  password.add(upperCase[random.nextInt(upperCase.length)]);
  password.add(lowerCase[random.nextInt(lowerCase.length)]);
  password.add(numbers[random.nextInt(numbers.length)]);
  password.add(symbols[random.nextInt(symbols.length)]);

  for (int i = 4; i < length; i++) {
    password.add(CharsOptions[random.nextInt(CharsOptions.length)]);
  }

  password.shuffle();


  return password.join();
}
```

Problem 4

: Take two lists, for example

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89] , b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

and write a program that returns a list that contains only the elements that are common between them (without duplicates). Make sure your program works on two lists of different sizes.

```dart
import 'dart:io';

void main() {
  List<int> num1 = [];
  List<int> num2 = [];
  stdout.write('Enter the size of list 1 : ');
  int sizeOfList1 = int.parse(stdin.readLineSync() ?? '0');
  stdout.write('Enter the size of list 2 : ');
  int sizeOfList2 = int.parse(stdin.readLineSync() ?? '0');
  print('Enter the values of list 1');
  for (var i = 0; i < sizeOfList1; i++) {
    num1.add(int.parse(stdin.readLineSync() ?? '0'));
  }
  print('Enter the values of list 2');
  for (var i = 0; i < sizeOfList2; i++) {
    num2.add(int.parse(stdin.readLineSync() ?? '0'));
  }
  FindCommon(num1, num2);
}

List FindCommon(List num1, List num2) {
  List commonelements = [];
  for (int i = 0; i < num1.length; i++) {
    for (var j = 0; j < num2.length; j++) {
      if (num1[i] == num2[j] && !commonelements.contains(num1[i])) {
        commonelements.add(num1[i]);
      }
    }
  }
  print(commonelements);
  return commonelements;
}
```

Problem 4 other solution

Take two lists, for example :

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```dart
import 'dart:io';

void main() {
  List<int> num1 = [];
  List<int> num2 = [];
  stdout.write('Enter the size of list 1 : ');
  int sizeOfList1 = int.parse(stdin.readLineSync() ?? '0');
  stdout.write('Enter the size of list 2 : ');
  int sizeOfList2 = int.parse(stdin.readLineSync() ?? '0');
  print('Enter the values of list 1');
  for (var i = 0; i < sizeOfList1; i++) {
    num1.add(int.parse(stdin.readLineSync() ?? '0'));
  }
  print('Enter the values of list 2');
  for (var i = 0; i < sizeOfList2; i++) {
    num2.add(int.parse(stdin.readLineSync() ?? '0'));
  }
  findCommon(num1, num2);
}
List<int> findCommon(List<int> num1, List<int> num2) {
  Set<int> set1 = num1.toSet();
  Set<int> set2 = num2.toSet();
  List<int> commonElements = set1.intersection(set2).toList();
  return commonElements;
}
```

Problem 5

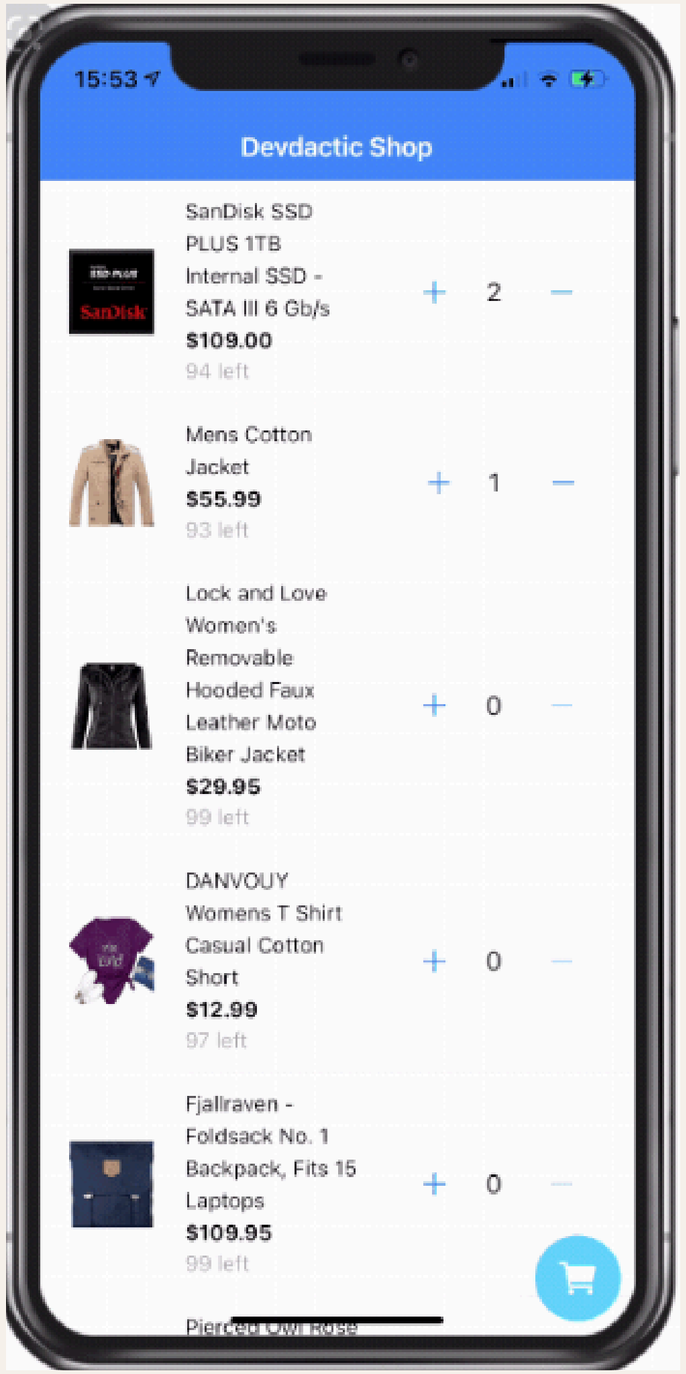
Let’s say you are given a list saved in a variable : a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100] Write a Dart code that .takes this list and makes a new list that has only the even elements of this list in it

```dart
import 'dart:io';

void main() {
  List<int> nums = [];
  stdout.write('Enter the size of list  : ');
  int sizeOfList = int.parse(stdin.readLineSync() ?? '0');
  print('Enter the values of list ');
  for (var i = 0; i < sizeOfList; i++) {
    nums.add(int.parse(stdin.readLineSync() ?? '0'));
  }
  EvenNumberInList(nums);
}

List<int> EvenNumberInList(List nums) {
  List<int> EvenNums = [];
  for (int i = 0; i < nums.length; i++) {
    if (nums[i] % 2 == 0) {
      EvenNums.add(nums[i]);
    }
  }
  print(EvenNums);
  return EvenNums;
}
```

Widget Tree


15:53
Devdactic Shop
SanDisk SSD PLUS 1TB Internal SSD - SATA III 6 Gb/s
$109.00
94 left
2
Mens Cotton Jacket
$55.99
93 left
1
Lock and Love Women's Removable Hooded Faux Leather Moto Biker Jacket
$29.95
99 left
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DANVOUY Womens T Shirt Casual Cotton Short
$12.99
97 left
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Fjallraven - Foldsack No. 1 Backpack, Fits 15 Laptops
$109.95
99 left
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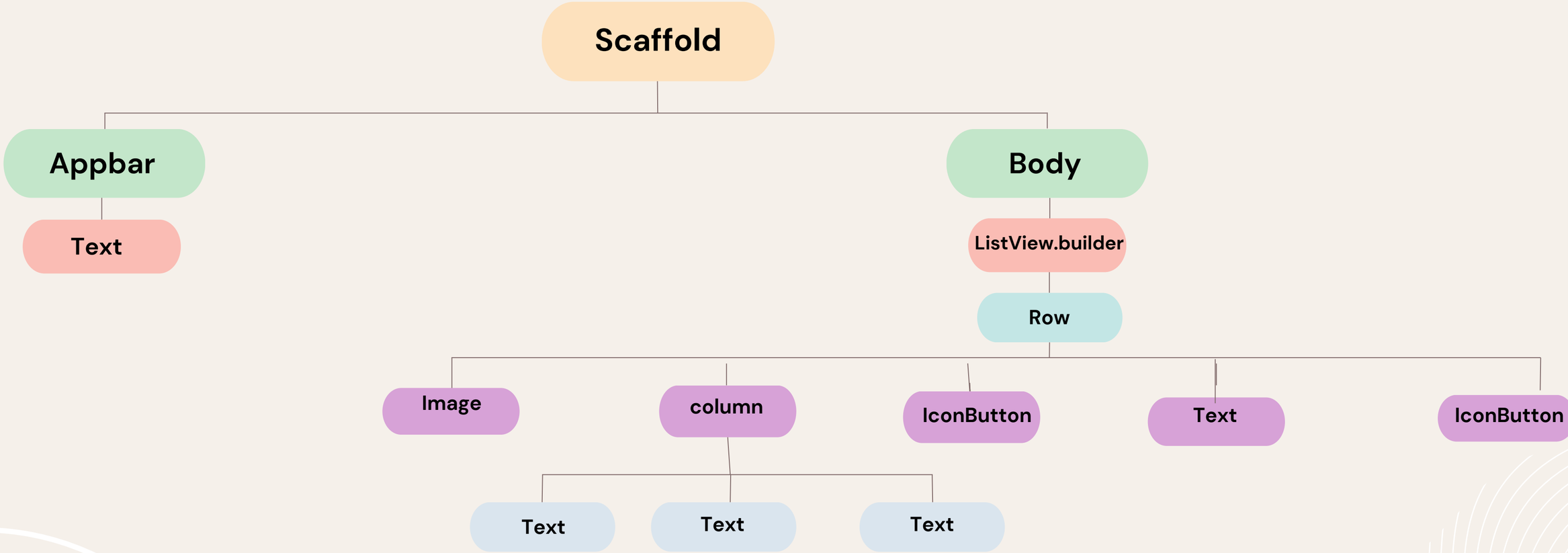
SCREEN 4


Scaffold
Appbar
Text
Body
ListView.builder
Row
Image
column
IconButton
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IconButton
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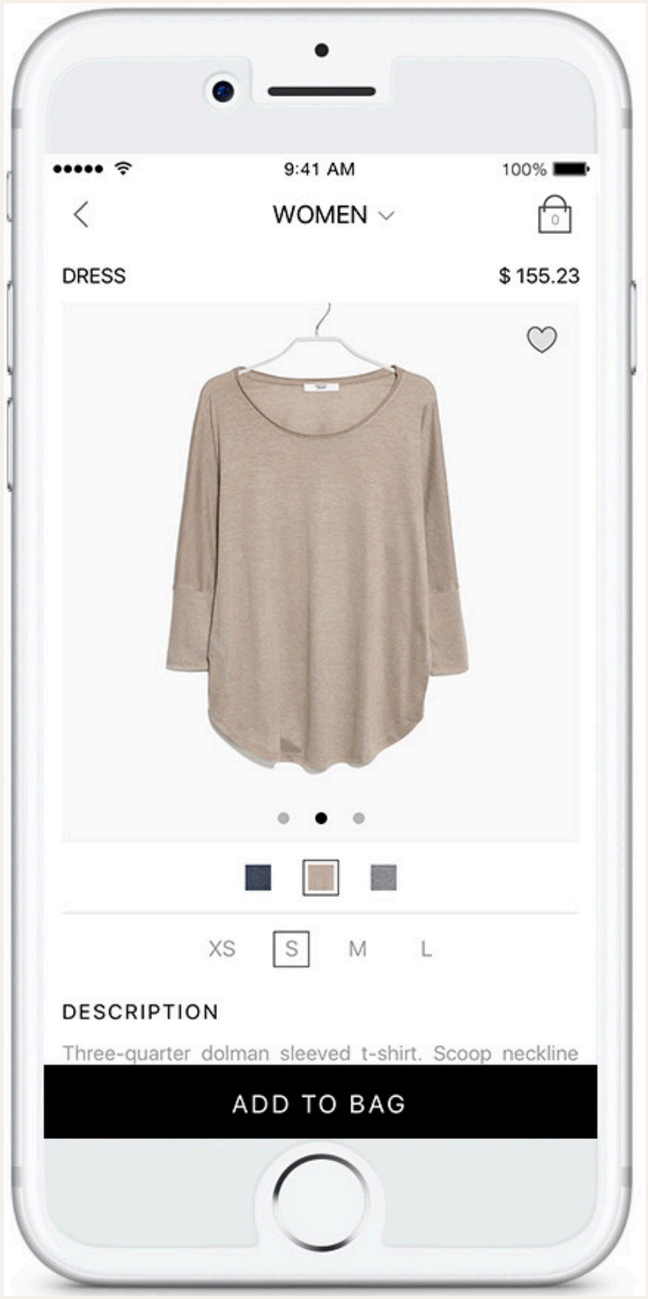
9:41 AM
100%
WOMEN
0
DRESS
$ 155.23
XS
S
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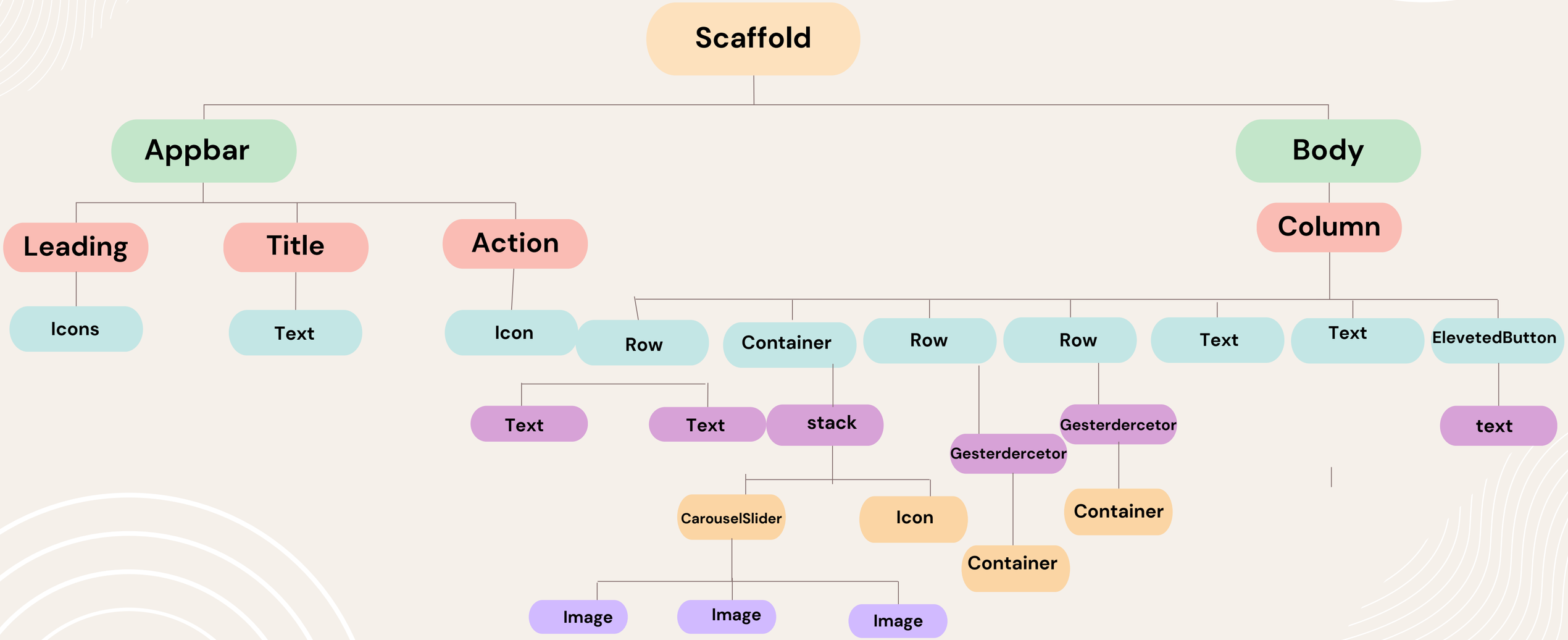
L
DESCRIPTION
Three-quarter dolman sleeved t-shirt. Scoop neckline
ADD TO BAG

SCREEN 5


Scaffold
Appbar
Body
Leading
Title
Action
Column
Icons
Text
Icon
Row
Container
Row
Row
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ElevetedButton
Text
Text
stack
Gesterdercetor
Gesterdercetor
text
CarouselSlider
Icon
Container
Container
Image
Image
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