First Approach

```java
package bullscows;

import java.util.Random;
import java.util.Scanner;

public class Main {
    // Boolean variable to control when the secre code is reveals
    public static boolean isSecretReveals = false;

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Game greeting
        System.out.println("The secret code is prepared: ****.");

        // Define variables to control the number of attempts
        int attempt = 1;

        // Generates the secrete code
        int secret = generateSecret();

        // Prompt the user to guess the secret code
        while (!isSecretReveals) {
            System.out.println("\nTurn " + attempt + ". Answer:");
            int user_guess = scanner.nextInt();
            checkBullsAndCows(secret, user_guess);
            attempt += 1;
        }
        scanner.close();
    }

    private static String generateSecret() {  // Need improve to generate only u
        Random random_number = new Random();
        int secret = random_number.nextInt((10000));
        return secret;
    }

    private static void checkBullsAndCows(int secret, int user_guess) {
        int bulls = 0;
        int cows = 0;

        // Convert the user guess and secret code into arrays
        String secretString = String.valueOf(secret);
        String guessString = String.valueOf(user_guess);

        String[] ArrayFromSecretDigits = secretString.split("");
        String[] ArrayFromGuessDigits = guessString.split("");


        for (int i = 0 ; i < ArrayFromSecretDigits.length; i++) {
            for (int j = i; j < ArrayFromGuessDigits.length; j++) {
                if (ArrayFromGuessDigits[i].equals(ArrayFromSecretDigits[j]) &&
                    bulls += 1;
                }
```

```
                }
            }

            for (int i = 0 ; i < ArrayFromSecretDigits.length; i++) {
                for (int j = 0; j < ArrayFromGuessDigits.length; j++) {
                    if (ArrayFromGuessDigits[j].equals(ArrayFromSecretDigits[i]) &&
                        cows += 1;
                    }
                }
            }

            if (bulls == ArrayFromSecretDigits.length) {
                System.out.println("Grade: " + bulls + " bulls. ");
                System.out.print("Congrats! The secret code is " + secret + ".");
                isSecretReveals = true;
            } else if (bulls == 1 && cows == 0) {
                System.out.println("Grade: " + bulls + " bull.");
            } else if(cows == 1 && bulls == 0) {
                System.out.println("Grade: " + cows + " cow.");
            } else if(bulls == 0 && cows == 0) {
                System.out.println("Grade: None.");
            } else if(bulls > cows) {
                System.out.println("Grade: " + bulls + " bulls.");
            } else if (bulls == cows) {
                System.out.println("Grade: " + bulls + " bull and " + cows + " cow."
            } else {
                System.out.println("Grade: " + cows + " cows.");
            }
        }
    }
}
```

Second Approach

```
In [ ]: package bullscows;

        import java.util.HashSet;
        import java.util.Random;
        import java.util.Scanner;

        public class Main {
            // Boolean variable to control when the secre code is reveals
            public static boolean isSecretRevealed = false;

            public static void main(String[] args) {
                // Game greeting
                try (Scanner scanner = new Scanner(System.in)) {
                    // Game greeting
                    System.out.println("The secret code is prepared: ****.");

                    // Define variables to control the number of attempts
                    int attempt = 1;

                    // Generates the secrete code
                    String secret = generateSecret();

                    // Prompt the user to guess the secret code
                    while (!isSecretRevealed) {  // Ensure at least 2 turns
                        System.out.println("\nTurn " + attempt + ". Answer:");
```

```java
                String userGuess = scanner.next();
                checkBullsAndCows(secret, userGuess);
                attempt ++;
            }
        }
    }

    /**
     * Generates a 4-digit secret code consisting of unique digits.
     *
     * The method uses a HashSet to ensure that each digit in the secret code is
     * Random digits between 0 and 9 are generated until the secret code contain
     * 4 unique digits. The result is returned as a string.
     *
     * @return A String representing the 4-digit secret code with unique digits.
     */
    private static String generateSecret() {
        Random random_number = new Random();
        HashSet<Integer> uniqueDigits = new HashSet<>();
        StringBuilder secret = new StringBuilder();

        while (uniqueDigits.size() < 4) {
            int digit = random_number.nextInt(10);
            if (uniqueDigits.add(digit)) {  // Adds the digit to the HashSet if
                secret.append(digit);   // If unique, append it to the secret cod
            }
        }

        return secret.toString();
    }

    /**
     * Checks the user's guess against the secret code and calculates the number
     *
     * Bulls: Digits in the guess that match both the value and position in the s
     * Cows: Digits in the guess that exist in the secret code but are in the wro
     *
     * The method prints the grade (number of bulls and cows) for the current gue
     * of bulls equals the length of the secret code (4), the game ends, and the
     *
     * @param secret    The 4-digit secret code as a String with unique digits.
     * @param userGuess The user's 4-digit guess as a String.
     *
     * Example:
     * If the secret code is "4931" and the user's guess is "1234":
     * - Bulls: 1 (digit '3' is in the correct position).
     * - Cows: 2 (digits '1' and '4' are present but in the wrong positions).
     * The method prints: "Grade: 1 bull and 2 cows."
     */
    private static void checkBullsAndCows(String secret, String userGuess) {
        int bulls = 0;
        int cows = 0;

        // Count bulls
        for (int i = 0 ; i < secret.length(); i++) {
            if (userGuess.charAt(i) == secret.charAt(i)) {
                bulls += 1;
            }
        }
```

```java
        // Count cows
        for (int i = 0; i < secret.length(); i++) {
            if (userGuess.charAt(i) != secret.charAt(i) && secret.contains(Strin
                cows++;
            }
        }

        // Print the grade
        if (bulls == 4) {
            System.out.println("Grade: " + bulls + " bulls.\nCongrats! The secre
            isSecretRevealed = true;
        } else if (bulls == 1 && cows == 0) {
            System.out.println("Grade: " + bulls + " bull.");
        } else if(cows == 1 && bulls == 0) {
            System.out.println("Grade: " + cows + " cow.");
        } else if(bulls == 0 && cows == 0) {
            System.out.println("Grade: None.");
        } else if(bulls > cows) {
            System.out.println("Grade: " + bulls + " bulls.");
        } else if (bulls == cows) {
            System.out.println("Grade: " + bulls + " bull and " + cows + " cow."
        } else {
            System.out.println("Grade: " + cows + " cows.");
        }
    }
}
```