CUSTOM PASSWORD EXCEPTIONS

In this coding exercise you will be expected to develop a Illegal Password Exception hierarchy. All exceptions in this hierarchy will be checked. The expected exception types are as below
IllegalPasswordException: This exception is the top-level exception in the hierarchy.
PasswordTooLongException: This exception is one of the sub-exception of the IllegalPasswordException
PasswordSpecialCharactersException: This exception is one of the sub-exception of the IllegalPasswordException

The complete use of these exceptions in a program and the output will be provided.

1. The main() method and the complete checkPassword(String password) throws IllegalPasswordException method are as below

```
public class Main {
   static boolean hasSpecial(String s) {
      if (s == null) return true;
      int len = s.length();
      for (int i = 0; i < len; i++) {
         if ((Character.isLetterOrDigit(s.charAt(i)) == false)) {
            return true;
         }
      }
      return false;
   }

   static void checkPassword(String password) throws IllegalPasswordException {
      if (password == null) throw new NullPointerException();
      if (password.length() > 16) throw new PasswordTooLongException(
            "Password has more than 16 characters");
      if (hasSpecial(password))
         throw new PasswordSpecialCharactersException("Password has " +
               "special characters");

   }

   public static void main(String[] args) {
      try {
         checkPassword("qwerty");
         System.out.println("OK");
      } catch (IllegalPasswordException e) {
         e.printStackTrace();
      }

      try {
         checkPassword(null);
         System.out.println("OK");
      } catch (PasswordTooLongException e) {
         System.out.println(e.getMessage());
      } catch (PasswordSpecialCharactersException e) {
         System.out.println(e.getMessage());
      } catch (IllegalPasswordException e) {
         System.out.println(e.getMessage());
      }catch (RuntimeException e) {
         System.out.println(e.getMessage());
      }

      try {
         checkPassword("123456789123456789");
```

```
            System.out.println("OK");
        } catch (PasswordTooLongException e) {
            System.out.println(e.getMessage());
        } catch (PasswordSpecialCharactersException e) {
            System.out.println(e.getMessage());
        } catch (IllegalPasswordException e) {
            System.out.println(e.getMessage());
        }

        try {
            checkPassword("awq@");
            System.out.println("OK");
        } catch (PasswordTooLongException e) {
            System.out.println(e.getMessage());
        } catch (PasswordSpecialCharactersException e) {
            System.out.println(e.getMessage());
        } catch (IllegalPasswordException e) {
            System.out.println(e.getMessage());
        }

        try {
            checkPassword("awq@");
            System.out.println("OK");
        } catch (PasswordTooLongException e) {
            System.out.println(e.getMessage());
        } catch (PasswordSpecialCharactersException e) {
            try {
                throw new PasswordSpecialCharactersException();
            } catch (PasswordSpecialCharactersException exc) {
                System.out.println(exc.getMessage());
            }
        } catch (IllegalPasswordException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

2. Output of the above main() method is as below

```
OK
null
Password has more than 16 characters
Password has special characters
Password Special Character Exception
```