```
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Student Name = Jitong Ding

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CSE017 Grading sheet for Jitong Ding

Homework Assignment NumberConvertor

Total points                          maximum: 100

Completeness: All class/methods included (40)   [ 40 ]

Compilation: Program compiles (20)               [ 20 ]

Execution: Program executes properly (30)        [ 30 ]

Style: Program obeys style rules (10)            [ 10 ]

Subtotal                                           100

Late Penalty                                     [    ]

Total Points                                       100


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```

```
/*
CSE 17
Jitong Ding
jid221
Homework #3 DEADLINE: October 29, 2018
Program: Decimal and Binary transition
*/

 /** A class called BinaryFormatException is a subclass of NumberFormatException
  */
public class BinaryFormatException extends NumberFormatException{

  /** Private data field */
  private char badChar;
  private int charPos;

  /** Construct a new BinaryFormatException with charPos, badChar and a super cl
ass constructor */
  public BinaryFormatException(int charPos, char badChar){
    super("Binary numbers consist only of 0's and 1's");
    this.charPos = charPos;
    this.badChar = badChar;
  }

  /** A method to return badChar*/
  public char getBadChar(){
    return badChar;
  }

  /** A method to return charPos*/
  public int getCharPos(){
    return charPos;
  }

}
```

```
/*
CSE 17
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Homework #3 DEADLINE: October 29, 2018
Program: Decimal and Binary transition
*/

import java.util.Scanner;
import java.util.InputMismatchException;

public class NumberConvertor{

  /** A method tansfers the Binary number in string form to Decimal number and r
eturns
    * the decimal integer equivalent. Also throw the BinaryFormatException*/
  public static int binaryToDecimal(String binText) throws BinaryFormatException
{
    int decimal = 0;
    for(int i =0; i< binText.length(); ++i){
      if(binText.charAt(i)=='0'||binText.charAt(i)=='1'){
          int remain = (binText.charAt(binText.length()-(i+1)))-'0';
          decimal += (remain*Math.pow(2,i));
      }
      else{
        throw new BinaryFormatException(i,binText.charAt(i));
      }
    }
    return decimal;
  }

  /** A method transfers the decimal number into binary number and return equiva
lent binary number */
  public static String decimalToBinary(int decInt){
    String binaryNum = "";
    while(decInt != 0){
      binaryNum = (decInt%2) + binaryNum;
      decInt /= 2;
  }
    return binaryNum;
  }

  /** The main method */
  public static void main(String[] args){
    Scanner scan = new Scanner(System.in);
    /** A loop to type the thing and the loop wil not break until 'Q' or 'q' is
entered */
    while(true){
      System.out.print("Enter a choice (B,D, or Q):");
      char c = scan.next().charAt(0);
      if(c=='B'||c=='b'){
        System.out.print("Enter a binary number:");
        /** A try-catch block to catch the exception */
        try{
          String bin = scan.next();
          System.out.println("The decimal equivalent is "+binaryToDecimal(bin));
        }
        catch (BinaryFormatException ex){
          System.out.printf("Character %s at index %d is not a valid binary digit\n",ex.getBadChar
(), ex.getCharPos());
    }
        finally{
          System.out.println();
      }

      }
      else if (c=='D'||c=='d'){
        System.out.print("Enter a nonnegative decimal integer:");
        /** A try-catch block to catch the exception */
        try{
          int num= scan.nextInt();
          if(num <0){
            System.out.println("Thats a negative integer!");
```



```
          }
          else{
            System.out.println("The binary equivalent is "+decimalToBinary(num));
            }
          }
        catch(InputMismatchException ex){
         System.out.println("You did not enter a valid integer.");
         scan.next();
        }
        System.out.println();
    }
      else if (c=='Q'||c=='q'){
        System.out.println("Goodbye!");
        break;
    }
      else{
        System.out.printf("%s is not a valid option.\n",c);
        System.out.println();
    }
  }
}
```

```
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############ Compiled Result ###############


Source Code Compilation:




##########################################


##########################################
############ Execution Result ##############
##########################################


##########################################
Test1(input1.txt) output - testOutput1.txt


B
1011
b
1001
B
101010101
b
11111000010
Q
Enter a choice (B,D, or Q):
Enter a binary number:
The decimal equivalent is 11

Enter a choice (B,D, or Q):
Enter a binary number:
The decimal equivalent is 9

Enter a choice (B,D, or Q):
Enter a binary number:
The decimal equivalent is 341

Enter a choice (B,D, or Q):
Enter a binary number:
The decimal equivalent is 1986

Enter a choice (B,D, or Q):
Goodbye!


##########################################
Test2(input2.txt) output - testOutput2.txt


D
44
d
21
D
125
d
255
q
Enter a choice (B,D, or Q):
```



```
Enter a nonnegative decimal integer:
The binary equivalent is 101100

Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
The binary equivalent is 10101

Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
The binary equivalent is 1111101

Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
The binary equivalent is 11111111

Enter a choice (B,D, or Q):
Goodbye!


##########################################
Test3(input3.txt) output - testOutput3.txt


B
1
b
1111
b
0017
D
22
d
21
D
-67
five
w
d
ten
q
Enter a choice (B,D, or Q):
Enter a binary number:
The decimal equivalent is 1

Enter a choice (B,D, or Q):
Enter a binary number:
The decimal equivalent is 15

Enter a choice (B,D, or Q):
Enter a binary number:
Character 7 at index 3 is not a valid binary digit

Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
The binary equivalent is 10110

Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
The binary equivalent is 10101

Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
Thats a negative integer!

Enter a choice (B,D, or Q):
f is not a valid option.

Enter a choice (B,D, or Q):
w is not a valid option.
```

```
Enter a choice (B,D, or Q):
Enter a nonnegative decimal integer:
You did not enter a valid integer.

Enter a choice (B,D, or Q):
Goodbye!
```