Project

SOFT6018 – Problem Solving & Programming I
(worth 20%)

Specification

CIT Sports & Social club are considering running a Santa's grotto so that staff and students can bring their children to CIT to visit Santa. You have been asked to develop a Java application to assist Santa's "elves" to run the grotto.

The application should enable the "elves" to enter:

- The family name – must contain at least 1 character.
- The number of children in the family – must be an integer value greater than 0.
- For each child the following details should be entered:
    - The child's name – must contain at least 1 character.
    - If the child is a girl or boy – must be a single character which is g or b, regardless of case.
    - The child's age – must be an integer value greater than or equal to 0 but less than or equal to 12.
- The number of adults accompanying the children – must be an integer value greater than 0.
- If a photograph is required – must be a single character which is y or n, regardless of case.

The application should print out a ticket for the family containing the family name and the details for each child, number of accompanying adults and the photographic requirements together with the total cost of the visit.

The total cost of the visit can be determined as follows:

- If the child is 1 year old or less then the visit it is free as no present is required.
- If the child is more than 1 year old but less than or equal to 5 years old then the cost is €5, as a small present is required.
- If the child is more than 5 years old but less than or equal to 12 years old then the cost is €7.50 as a large present is required.
- If there are more than 2 adults accompanying the child/children then there is an additional charge of €2.50 per adult.
- If a picture is required then an extra charge of €10 is applied.

Having processed the details for one family, the "elves" should be asked if they would like to process the details for another family. The "elves" must enter a single character which is y or n, regardless of case.

When there are no further families to be processed the application should provide a summary of the data entered as follows:

- The total number of bookings.
- The total number of children booked.
- The number of girl and boy presents required in each age category.
- The total number of photographs required.
- The total value of the bookings made.

A sample run of the application might appear as follows:

```
*******************************
* Welcome to CIT's Santa Grotto *
*******************************

Enter the family name: Murphy
How many children are there in your family?: 2

Child 1 Details:
=======================
Enter the child's name: Mary
Is Mary a girl or a boy (g/b)?g
How old is Mary?: 3

Child 2 Details:
=======================
Enter the child's name: Mick
Is Mick a girl or a boy (g/b)?b
How old is Mick?: 1
How many adults accompanying children?: 3

Picture Required (Y/N)?: Y

Ticket
======
Family Name: Murphy
Number of Children: 2
Child 1: Mary, girl, 3 years old, present required, cost is €5.0
Child 2: Mick, boy, 1 year old, no present required, cost is €0.0
2 adults free and 1 additional adults @ €2.5 per adult.
Picture required.
Cost (€): 17.5

Do you want to enter the details of another family (Y or N)? Y

Enter the family name: Jones
How many children are there in your family?: 1

Child 1 Details:
=======================
Enter the child's name: John
Is John a girl or a boy (g/b)?b
How old is John?: 7
How many adults accompanying children?: 1

Picture Required (Y/N)?: y

Ticket
======
Family Name: Jones
Number of Children: 1
Child 1: John, boy, 7 years old, present required, cost is €7.5
1 adult free.
Picture required.
Cost (€): 17.5

Do you want to enter the details of another family (Y or N)? n
```

```
Summary
=======
Total number of bookings: 2
Total number of children booked: 3

Presents required for:
Age Range          Girls Boys
---------          ----- ----
<=1                0     0
>1 and <=5         1     0
>5                 0     1
Total number of photos required: 2
Total Booking Value (€): 35.0
```

Marking Scheme

Submission Date: Sunday 6th December 2015 @ 23:59	
Description	**Mark**
Comments, e.g..: • Appropriate and informative comments Programming Style, e.g.: • Naming Conventions for identifiers for classes, methods, variables and constants. • Indentation and lineation. • Readability of code.	10
Implementation, e.g.: • Constant Declarations • Variable Declarations • Providing the functionality specified. • Ensuring that the code produces valid output and is fully tested.	70
Input Validation, e.g.: • Checking that a value of the correct data type has been entered and that the value is in the appropriate range.	20