UNIVERSITY OF TECHNOLOGY, JAMAICA

School of Computing and Information Technology

Object-Oriented Programming Project

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Group Assignment (2 persons to each group)

Given Week of October 9, 2017 **Due Week of November 6, 2017**

The Jamaica Society for the Prevention of Cruelty to Animals (J.S.P.C.A) is a registered charity and was founded in 1904 by Lady Lumb. It maintains good relationships with the various Societies for the Prevention of Cruelty to Animals (S.P.C.As) in the United States and the Caribbean. The J.S.P.C.A operates the only animal hospital in the island that treats all animals regardless of the client's ability to pay. It offers outreach spay/neuter programmes. It also inspects all pounds, private and public zoos and advocates better conditions for all animals.

The J.S.P.C.A operates a full veterinary clinic at 10 Winchester Road, open Mondays to Saturdays, and it also recently instituted a mobile clinic at Caymanas Track Limited on Saturdays and Sundays. The veterinarians care for many different types of animals from dogs and cats to birds, horses, goats and even cows! In many ways, animals are just like us (i.e. they need regular check-ups and visits to the doctor!). Clients of the clinics make appointments providing their name, contact details and information about the animal to be treated including the problem and whether or not they will be able to pay for the service.

The J.S.P.C.A is often asked to remove unwanted animals from public or private areas which can be anywhere in Jamaica. Members of the public call the office provide the name and contact details along with the address from which the animal should be removed. This is a heart-breaking job, because animals left to reproduce indiscriminately and forage for themselves usually are not good candidates for adoption, and this means they have to be euthanized.

The J.S.P.C.A has advertised for the services of a software development team to provide the society with an electronic system for tracking the many interventions done on a daily basis. The interventions include treatment of animals at the clinics at Winchester Road and Caymanas Track Limited, and the removal services.

When recording an intervention for a veterinary clinic visit the staff records an intervention number (e.g. 20130930-1), date and time intervention request was made. The client's details including name (first and last), contact number and whether the client will pay in full, make a contribution or cannot pay. They also record the type of animal, the breed, gender, the approximate age of animal, reason for visiting the clinic, the clinic visiting and the intended date of visit.

When a request for removal of an animal is received the staff records an intervention number (e.g. 20130930-1), date and time the request was made. The client's details including name (first and last), contact number, the address from which the animal should be removed and whether the client will pay in full, make a contribution or cannot pay. Once the animal is removed it is either kept for adoption or it is euthanized, the removal request records the outcome of the removal.

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Program Requirements:

1 Perform an Object Oriented Analysis (OOA) on the proposed J.S.P.C.A System described above. The OOA should clearly show the steps used to identify potential classes and the selection of the actual classes. Based on the OOA, create an Object Oriented Design (OOD) using the Unified Modelling Language (UML). The OOD should show appropriate UML diagrams for **all** classes and also the class relationship diagram, which should show all relationships existing between the classes.

2 Using Visual C++ or Eclipse for Java Developers, implement the J.S.P.C.A System using the projects feature of the IDE.

3 The user should maintain the data for each Veterinary Clinic Visit via a menu with the options:
- Add: Allows the user to add a new record to the system.
- Update: Allows the user to update an existing record.
- View: Allows the user to view a single record.
- View All: Allows the user to view all records.
- Delete: Allows the user to delete a record.

4 The user should maintain the data for each Removal Request via a menu with the options:
- Add: Allows the user to add a new record to the system.
- Update: Allows the user to update an existing record.
- View: Allows the user to view a single record.
- View All: Allows the user to view all records.
- Delete: Allows the user to delete a record.

5 The user shall generate a system reports via a menu with the options:
- Veterinary Clinic Report:
  - Location: Allows the user to generate a report of visits based on location.
  - Visit Date: Allows the user to generate a report of visits based on date.
  - Animal: Allows the user to generate a report of visits based on animal type.
- Removal Request Report:
  - Location: Allows the user to generate a report of removals based on location.
  - Request Date: Allows the user to generate a report of removals based on date.
  - Removal Outcome: Allows the user to generate a report of removals based on the outcome.

6 When the exit option is selected the application should close.

7 All committed changes made during the execution of the program, should be stored and used to update the relevant files, when the application terminates.

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Grading Scheme (100 marks): General Mark Breakdown

- ***Documentation (20 marks)***
    - Signed Authorship Form(s) (i.e. one per member) **[2 marks]**
    - Group Report (outlining contribution(s) of each member) **[3 marks]**
    - Object-Oriented Analysis and Design of system (*Due Week of 09/Oct/2017*) **[10 marks]**
    - User Manual **[5 marks]**

    NB: Missing Authorship Forms and Group Report will result in lost of <u>10 marks</u>
- ***Source Code (30 marks)***
    - Comments **[3 marks]**
        - Each file should have details for the student(s) who wrote the file
        - Practice use of self-commenting files (i.e. proper variable and method naming)
        - Proper use of inline and method comments where necessary
    - Naming Convention
        - Pascal Case should be used for naming classes **[2 marks]**
        - Camel Case should be used for variable and method naming **[4 marks]**
        - Ensure class files are named appropriately **[1 marks]**
    - Object-Oriented Programming Techniques
        - Inheritance **[3 marks]**
        - Composition **[3 marks]**
        - Method overriding and overloading **[6 marks]**
        - Polymorphism **[3 marks]**
    - Use of Files **[5 marks]**
        - Proper implementation of appropriate file management
- ***Functionality (50 marks)***
    - Robustness **[7 marks]**
        - User Input validation
        - Error / Exception Handling
        - Program Navigation (i.e. Menu System)
    - Graphical User Interface
        - Ease of User Interaction **[6 marks]**
        - Appropriate Notifications (i.e. error and information messages) **[4 marks]**
    - System Functionality Implemented
        - Maintain Veterinary Clinic data **[10 marks]**
        - Maintain Removal Request data **[10 marks]**
        - Maintain System Reports **[13 marks]**

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Extra Marks (10 marks):

A project that satisfies the program's functional requirements can gain additional marks up to a maximum of 10 marks by implementing the additional requirements as follows:

- + 5 marks – Awarded for use of extended ASCII codes and function keys (e.g. F1 – F12, Arrow Keys)
- + 5 marks – Awarded for use of colour and graphics to enhance the look and feel of the program

Submission:

Submit signed authorship form(s) along with CD/DVD containing Documentation, Source Files and Executable to Student Affairs Office on or before the due date of **November 10, 2017**.

Late Submission:

Any project submitted after the due date will be late and 10 % will be deducted for each day late. Late projects will not be considered for extra marks. Saturday and Sunday will count as one day late.

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