Introduction to Programming Glossary

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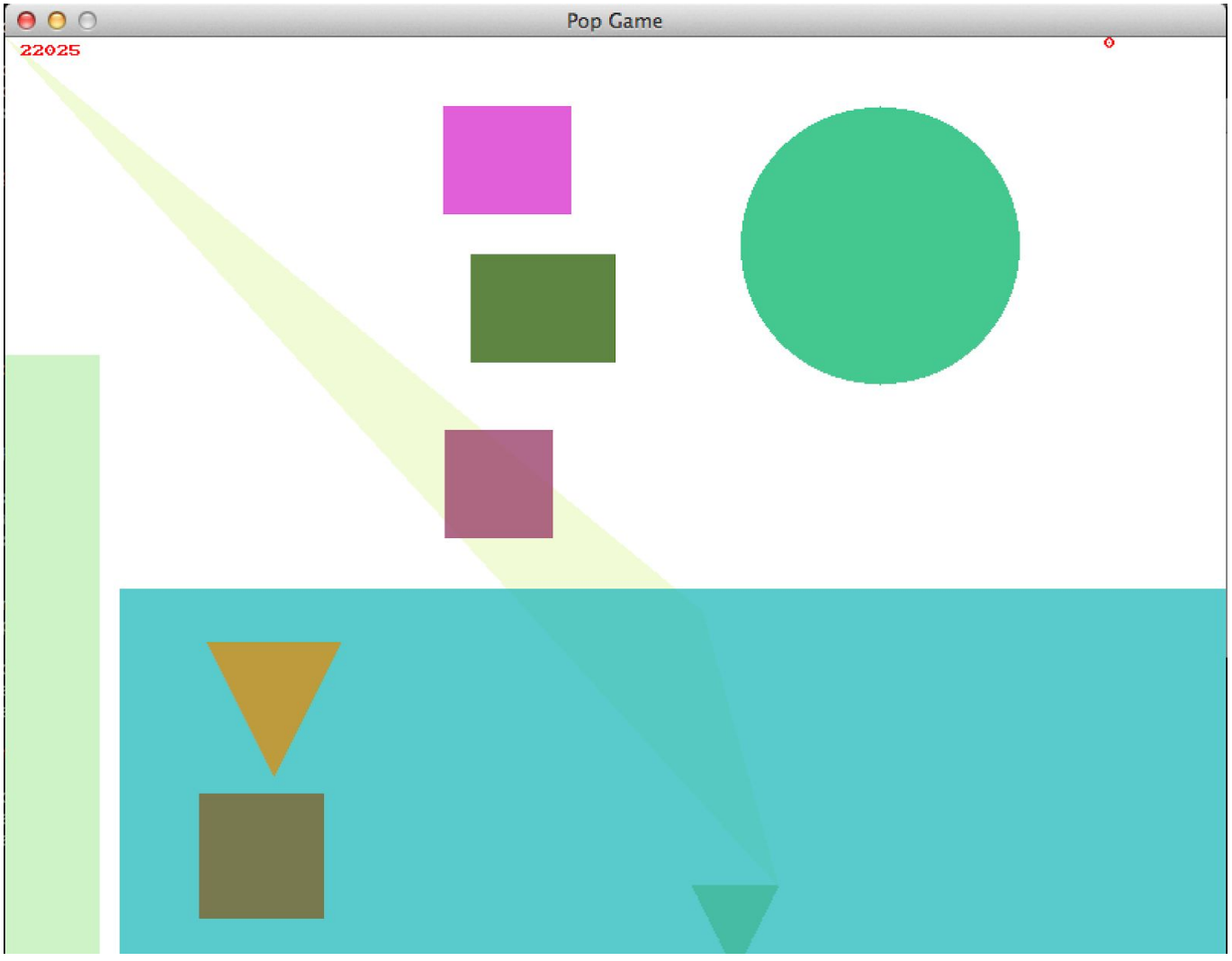
Programming Overview

Functional decomposition played an integral part in the creation of PopGame. It was important to understand what the game needed to do and how to implement these needs into smaller building block, which could be used to piece together the bigger picture.

Control was also implemented to have the program perform certain tasks depending on conditions that had to be met. For e.g. control flow is used to make the shapes on the screen disappear only if the left mouse button is clicked within a shape.

I implemented arrays to track the number of shapes which were available for the user to interact with at any given time and custom data types, or records were used to handle the data for each individual shape. For e.g. each shape has a colour, a visible Boolean and a shape type. By using records, all these data types could be condensed into one artefact. It made dealing with data much easier and allowed for ease of programming. Please see the end of this document for the PopGame code.



Program

	Details / Answer
A program contains…	A program is comprised of procedures and functions, which are used in conjunction with parameters and variables. Functions and procedures make up the dynamics of a program. By using records, special variables can be made to cater for specific needs.

Record / Structure

	Details / Answer
A record/structure is …	A record is an artefact, which allows for the storage of multiple values of different data types.
A record contains …	Values of different data types, which are combined to make one, large artefact.

Example 1: PopGameData

This example record / structure is used in my PopGame. In contains all the data necessary for the shapes that are used in the game.

Pascal Code:

```
PopGameData = record
    shapes: array [0..NUM_SHAPES - 1] of Shape;
    score: Integer;
    shapesRemaining: Integer;
    popTimer: Timer;
end;
```

Illustration:

Enumeration

	Details / Answer
An enumeration is …	Is a range of options, which can be used in conjunction with a specific data type.

Example 1: ShapeKind

This example enumeration is used to control the shapes, which are available in my PopGame. It is used in conjunction with the record Shape.

Pascal Code:

```
ShapeKind = (CircleKind, RectangleKind, TriangleKind);

Shape = record
    colour: Color;
    visible: Boolean;
    case kind: ShapeKind of
        CircleKind: (circleShape: Circle;);
        RectangleKind: (rectangleShape: Rectangle;);
        TriangleKind: (triangleShape: Triangle;);
end;
```

Pointer

	Details / Answer
A pointer is …	Is a data type, which refers to an allocation in memory, that has a value stored in it.
When I picture a pointer …	I can imagine that the pointer is depicting that 'the information you need is at this particular point.' It points out the data I need.

Example 1: Contact Pointer

This example pointer points to a pre existing contact in the AddressBook.pas program.

Pascal Code:

Here is where the pointer is declared:

```
ContactPointer = ^Contact;
```

As you can see, it points to a contact!

Illustration:

Pointer Creation and Assignment:
The computer takes the data, which is assigned to the pointer, allocates it some memory and stores it. When a pointer is used in the future in conjunction with that data and a new variable, the computer then retrieves the data previously stored and makes in readily available.

Core Exercise 2 – Bounty Hunter's Hit List:

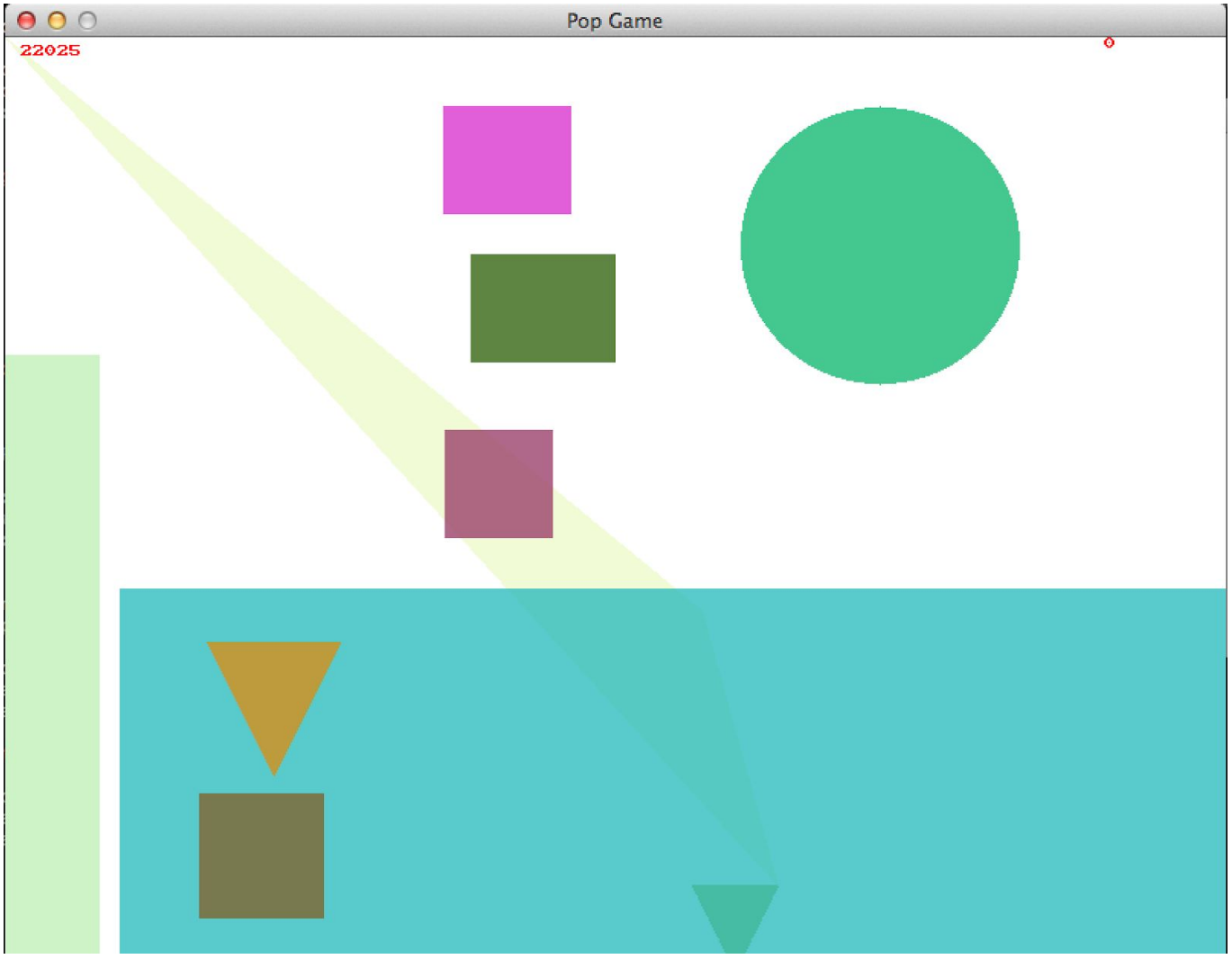
Here is a screenshot of my Bounty Hunter's Hit List program running:

```
Reubens-MacBook-Pro:src reuben$ ./BountyHunter
Enter the number of targets you wish to log: a
That is not actually a number.
Enter the number of targets you wish to log: 3
Enter the name of your target: Reuben
Enter the bounty value on your target: j
That is not actually a number.
Enter the bounty value on your target: 122342
Enter a difficulty of acquisition from 0 - 100: 100
Enter the name of your target: Jarvis
Enter the bounty value on your target: 1
Enter a difficulty of acquisition from 0 - 100: 0
Enter the name of your target: Snagzor
Enter the bounty value on your target: 50
Enter a difficulty of acquisition from 0 - 100: 785123
That is outside of the range of difficulty.
Enter a difficulty of acquisition from 0 - 100: 2
1: Name - Reuben, bounty $122342, difficulty (100.00).
2: Name - Jarvis, bounty $1, difficulty (0.00).
3: Name - Snagzor, bounty $50, difficulty (2.00).
Reubens-MacBook-Pro:src reuben$
```

Please find the code attached below

Core Exercise 3 – PopGame Complete:

Here is a screenshot of PopGame running:



Please find the code attached below