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a) Fragment 1 is a logic / declerative programming paradigm. This paradigm uses rules and facts to make a conclusion or goal. We are provided with the rules and facts of each person's hair colour. They are the heuristics that govern any conclusions we make. Lastly, the program is asked the hair colour of sally. From the rules and facts that form part of our knowledge base, we can conclude that Sally's hair is red.

Fragment 2 is an object-oriented programming paradigm. It features classes [redacted] and inheritance. The first section is a class of its own as it has its own attributes and characteristics. The second section is another class that displays the colour of a person's hair. This section uses inheritance as it inherits the names of sally, john and sue so that it can function.

b) The development of programming paradigms has always been to increase programmer productivity. As such the more a language reflects the world we live in, the easier a programmer can relate to it and the better he can focus on solving the problem as effeciently as

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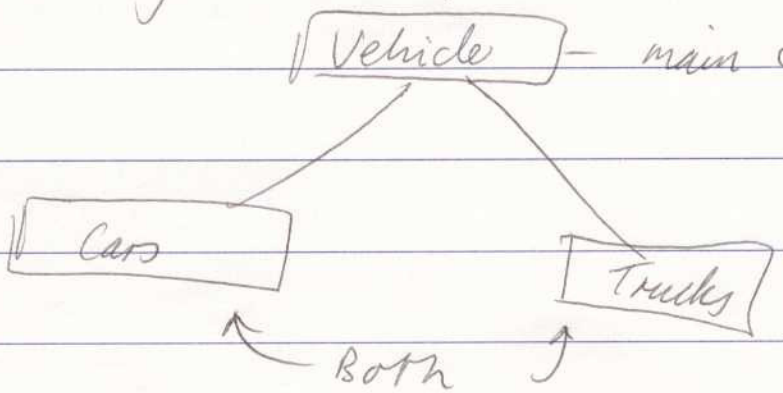
Centre Number: ..... Student Number: .....

possible.

The features of OO such as polymorphism allow it to easily represent our world:

polymorphism refers to the ability of a class to create similar subclasses that will perform a similar function. It's advantages include that it can be called using a single method ~~to~~ examples:



As as result of to get polymorphism, inheritance occurs, where the sub class 'inherits' all the data + methods from the class above it.

Encapsulation - All classes have set methods + data and can be treated independantly. The info in a class is static and an instance of that class must be made to make changes. This results in more secure and non corrupt code.

Abstraction - This allows the programmer to treat the object or class as a 'black box' where the inputs + outputs matter, not the methods to produce them.

By nature OO languages are modularised + allow for great reuse of code. OO languages such as Java allow for multi-platform execution, making the highly efficient + distributable.

OO languages have ~~made~~ significantly reduced the time + effort to create a product. ~~Stg~~ As such they are popular + will continue to be used.

c.(i) In line 20, the program begins a loop if the height of the rectangle isn't 0. However, this variable does not get its value from the user until within the loop, at line 23. Thus, the loop condition is not met, and the program will end without actually doing anything.

One method of correcting this is by inputting the height and width before the loop, so between lines 19 and 20. Thus the input gets validated and the program will run.

Another method is to change to a post-test repetition, using a REPEAT... UNTIL structure. Thus, the loop will be executed at least once, and will continue as desired.

(ii)
```
type
    pTriangle = ^TTriangle;
    TTriangle = object(TObject)
    private
        height, base : integer;
    public
        function area: integer;
    end;
```

```
function TTriangle.area :integer;
begin
    area := (height * base / 2);
end;
var
    InstTriangle : TTriangle;
```

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Centre Number: ..... Student Number: .....

d) To develop this system, the logic programming paradigm would be chosen as it uses rules and facts, its heuristics, to determine a goal or resolvent ~~statement~~ statement.

For this system the rules would be that only on chute per destination is allowed and that "compression rules" are used when the system thinks a bottleneck may occur.

The knowledge base is comprised of the number of passengers that are on the plane at each ~~lift~~ lift off, the number in each class and the amount of luggage they hold. An inference engine is used to determine the resolvent statements as to what chutes should be positioned to each plane and classes within the planes.

Through the use of the knowledge bases and resolvent statements, the correct operation of the baggage system will result.

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