

SCENARIO 1

Consider a software company making a ball-based sports game, maybe tennis, football, golf or basketball.

Each 'ball' has a set of individual properties. A golf ball is small and hard and can travel a long distance. A bowling ball is large and heavy and requires more power to get it rolling. However, fundamentally they are both balls and have similar properties.

- Make a list the properties of two balls, maybe include the material they are made from, weight, height, diameter, what they do, the impact on the elements, or touch etc.

Each of these balls has many properties. If you were creating a game with one of these balls, you would remove some of the more detailed elements.

- list all the differences between the balls
- list all the similarities, creating a Venn diagram of the various properties

When coding a ball in a game we can now model a ball and how it may interact. We now have a set of criteria or properties that every ball has, and this can be used as the basis of a model.

QUESTIONS

- 1) How is the model of the balls different from the reality of the balls? Give examples.
- 2) What other factors have been left out of the model that may impact upon how the ball behaves and responds?
- 3) What are the limitations of using Abstraction?
- 4) Why does abstraction need to be applied to the model of the balls? What would happen if every model of a ball was realistic?

SCENARIO 2

Abstraction in programs involves hiding the real process and complex methods behind a simple user interface.

Consider a simple currency conversion program; list all the stages of converting the currency from, say, pounds to dollars.

You will note that there are several parts to the final program solution; abstraction attempts to hide these from the user to make the conversion of the currency appear a simple and easy process.

- 1) Which parts or stages could be hidden from the user and why?
- 2) What could happen if the user saw these other stages?
- 3) Write the program or pseudo code to change/convert the currency value entered, thinking about which parts are being abstracted and why, and which unnecessary details are being removed from the user's perspective.