Play Acting

Simulation is one of the best educational applications for home computers. We take a further look at some of the programs available

Winds

This simulation program, available from Longmans for the BBC Micro, puts you in the position of master of an old sailing ship. On the screen is a map of the world, with your ship represented by a small dot, and this is steered using compass bearings — N, E, SW, etc. You choose your starting and finishing ports and the date you first set sail. The ship's speed depends on the prevailing wind's direction and strength, and this is shown at the bottom of the screen. Also shown are: the ship's position expressed in longitude and latitude; the wind zone ('westerlies' for example); the date; the distance already covered; and the total length of the voyage.

Let us take the most direct route from London to Rio de Janeiro, and let's set sail on January 1. Heading south, we make good progress using the Atlantic westerlies until we reach the Equator. Here we are becalmed for three days in the 'doldrums'. Eventually, the south-west trade wind blows up, but this poses a problem — how do we sail south-west into a south-westerly wind? The solution is to zigzag (or 'tack') first south and then west, until we reach Rio, 15,480 km (9,620 miles) and 207 days later.

Other voyages are more fraught with danger: hurricanes, polar ice and being shipwrecked are just some of the hazards you could face. This simulation program can be used in a variety of ways. At its simplest it can be used as a game to teach young children the points of the compass. In a school geography lesson, students could investigate the various wind zones and the idea of route optimisation.

Flight Simulation

Flight Simulation is a home computer version of the arcade game, in which you are the pilot of a small aeroplane. The screen displays your view from the cockpit, with the instrument panel below. This contains several dials, gauges and lights, all of which must be closely watched in order to fly the plane successfully. The plane's control column is represented by the four arrow keys, and the other controls (power, landing gear, etc.) are operated by other keys.

Unlike the arcade game, however, you are given the chance to familiarise yourself with the controls by starting with the plane already in the air. To see where the plane is, you can display a map showing the plane's position, navigation beacons and runways. The best way to navigate is to 'lock on' to a certain navigation beacon, and then bank the plane round until it is directly in line with the beacon. This is shown by the flashing dot on the 'RDF Clock', which moves round until it is at the top of the dial. You then fly straight ahead until the beacon is reached. Using this method, it is easy to fly to an airport, where you can attempt to land.

Landing is the most difficult manoeuvre. You need to be directly in line with the runway and approaching at the right speed, height and angle. Even if all these factors are correct, you can still make the simple — but fatal — mistake of forgetting to lower the undercarriage!
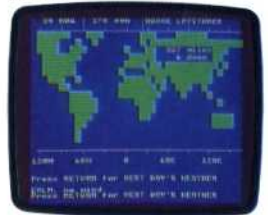
Physiological Simulation

In this program you act as the human brain and your task is to keep the body alive for just 50 minutes! The program simulates the various physiological changes (body temperature, water loss, etc.) that occur when the body performs some activity. The first thing to do is to enter the person's age and sex, and the activity you wish to perform. Sleeping is the easiest activity to simulate, as the body uses little energy. Others include walking, rock-climbing and — most strenuous of all — running.

The parameters that you have to control are: the breath volume, the rate of breathing and the rate of sweating. You then choose some initial values — for example, a breath volume of 2.5 litres, a rate of breathing of 15 breaths per minute, and a sweat rate of three grams per minute — and the simulation begins.

On the screen you see five graphs of the various bodily functions, and a clock. As time progresses, the graphs display how well the body is performing the chosen activity, and you have to prevent any of the graphs from exceeding the danger level. If, for example, the body temperature is getting too high, you can briefly suspend the activity and increase the rate of sweating to try and lower it. If you are unsuccessful and a graph does cross a warning line, you may get the curt diagnosis: 'PERSON IS DEAD'. Heinemann Educational Software produce this program for the BBC Model B.

Winds

Flight Simulation
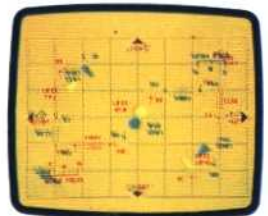
Physiological Simulation

IAN McKINNELL