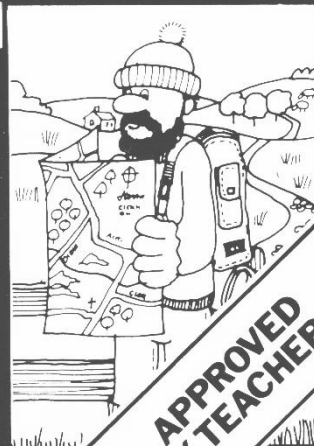


SCISOFT
EDUCATIONAL SOFTWARE

INTERMEDIATE LEVEL



**APPROVED
BY TEACHERS**

Type PAGE-#E00 (RETURN) *TAPE (RETURN) CH" (RETURN)

ING INSTRUCTIONS

pectrum LOAD " "
BC/ Electron Chain " "
ommodore 64 SHIFT RUN/STOP

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TREASURE HUNT

PROGRAM NAME "Treasure"

This program contains three games based on map reading, use of compass directions and bearings and estimation of distances. Each game is played on one of eight maps using standard ordnance survey symbols.

- In game 1 You are left stranded somewhere on the map and must reach home (represented by the red triangle symbol for a Youth Hostel), safely.
- In game 2 You must leave the hostel to collect treasure (shown by a bag of gold) and then return home.
- In game 3 You must find the gold as in game 2 except that now the gold is hidden. To help you in your search the computer will tell you how far away the gold is on each move.

To move around the maps you must give the computer a command. The commands are :

WALK plus a number (eg WALK 4) to walk in the direction you are facing. The number corresponds to the distance in kilometres and a scale is shown on the map.

BEARING plus a three figure number (eg BEARING 270 or BEARING 090) or

HEADING with a compass heading (eg HEADING N or HEADING SE)

You can choose whether to use BEARING or HEADING at the start of the program.

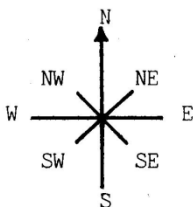
POSITION - highlights your position on the map.

QUIT - stops the game.

EXPLAIN - helps you if you are stuck.

Press ENTER after each command.

N.B. HEADING works on the points of the compass. The program will accept any of the eight headings shown in the diagram.



HEADING NE or BEARING 045 would leave you facing up and to the right.

AROUND BRITAIN IN 48HOURS

PROGRAM NAME "48hours"

This game is played on a high-resolution map of England, Scotland and Wales. The object of the game is to find the hidden name of a city or town. The computer has hidden each letter in a different place. To find the letters you must journey around the country by rail, road or air.

At the start of the game you are given £300 and have 48 hours to find all of the letters. You must therefore plan your journey carefully to avoid running out of time or money. After each move the computer will show your position on the map, the possible ROAD, RAIL or AIR routes plus their distances, the cost and the travel time. You must then decide where to visit in an attempt to find the hidden letters.

ROAD travel is quite slow but cheap.

RAIL travel is more expensive but faster.

AIR travel is much more expensive, limited to the major cities but is much quicker.

As you arrive in a new city the computer will tell you if you have found any letters and if you manage to find the whole word before time or money runs out then the computer will give you a score.

Also included in the program are two short sections which can be selected from the main MENU on estimating distances between cities and a quiz on place names.

SPREAD OF DISEASE IN WOODLAND

PROGRAM NAME "wood"

This program is a simulation which models the spread of disease (like DUTCH ELM DISEASE) in a wood. The wood is represented by a 10 by 10 grid and to start the model you must place in the grid diseased trees. You can also put spaces between the trees, which will help to halt the spread of disease.

After the model has been planned out there are three things in the model that you can change. They are :

1. The chance of a disease spreading from a diseased tree to a neighbouring healthy tree.

This is a probability, which means a decimal number between 0 and 1 is required.

1 means that the spread to the next tree is certain.

0 means that the spread to the next tree is impossible.

0.5 would mean that there was a 50 : 50 chance ($\frac{1}{2}$) of the disease spreading to the next tree.

2. The chance of an infected tree surviving the disease. This is another probability between 0 and 1 giving the chance of an infected tree surviving, becoming immune or dying of the disease. As before 1 means that the tree is certain to survive.

0 means that the tree is certain to die.

3. This sets how long (in months) the disease lasts in each tree before either killing it or leaving it immune. This can be set anywhere between 1 and 12 months.

After these three parameters have been set by using the cursor keys, the program will calculate how the disease spreads each month and display this on a grid. To stop the simulation press Q.

The program will then display graphically how the numbers of healthy, diseased and immune trees varies from month to month. It is interesting to note that a disease with a very high chance of spreading and a short span will give a characteristic bell-shaped curve on the graph. This is known as a NORMAL distribution and often occurs in nature. Also look at different patterns of infected trees at the start and see how they spread, try to balance the chance of the disease spreading and its length so that a few uninfected trees do survive.

COUNTRIES OF THE WORLD

PROGRAM NAME "countries"

This program is called a database. It contains information about all the major countries of the world. For each country the program holds the country's Name, Capital City, Area and Population.

You can find information about the countries using the MENU at the start of the program. This gives you four options

1. To find all details about a country.
2. To list the countries.
3. To search for a country's capital, area, population or name.
4. Help (gives a short summary of these instructions).

OPTION 1.

You would use option 1 if, for example you wanted to find out about France. Press 1 on the main menu and type in FRANCE and ENTER. The program will search through and list all its information on FRANCE.

OPTION 2.

This will give a list of :

1. Just the countries name
2. Names and capitals
3. Names and areas
4. Names and populations

Press 1 to 4 for your choice and the program will list out the information a screen full at a time. Press S and ENTER at any time to return to the menu.

OPTION 3.

This is the most powerful option. Using this option you can make the computer search through the countries to find those that fit a particular condition. For example to find all the countries with a population of greater than 50 million :

Select option 3 on the main menu then ENTER.

Press 4 for a search by population then ENTER.

Press 2 for the condition is greater than, then ENTER.

Type in 50000000 (no commas) then ENTER.

Press N to the question - Do you want to use another condition?

The computer will then run through and print out the names and populations of those countries that fit the rule. The following will appear on the screen.

```
Found:    BANGLADESH
POP       84665000
Found:    BRAZIL
POP       115398000
          etc
```

Press any key to pause the listing, ENTER to continue, S to stop and return to the MENU. When the computer has finished press ENTER to return to the main MENU.

It is possible to use two conditions linked with:

AND if both must be true.

or

OR if only one needs to be true.

For example to find all the countries with population greater than 50 000 000 and a double barrelled name, proceed exactly as before but press Y when you are asked - Do you want to use another condition?

Now press 1 and ENTER to search by NAME

Press 3 for CONTAINS then ENTER

The computer will now show - Name contains?

Press space and ENTER (a double barrelled name will have a space between the two names)

Press Y in response to - IS THIS OK?

Press 1 for AND then ENTER

The top of the screen should show:

Population Greater than 50000000

and

Name Contains " "

The computer will then start checking through the list and you should see the name and populations appear which satisfy the above conditions.

WEST GERMANY

Pop 61310000

UNITED KINGDOM

Pop 55836000

UNITED STATES

Pop 218059000

ACTIVITIES

Treasure Hunt

Having successfully loaded the program and done well in the map quiz (E on the menu) and read the instructions (I on the menu) you are ready to go hunting treasure.

ACTIVITY ONE

1. Move to S on the menu and choose game 1
2. Press ENTER and select to use points of the compass (2)
3. Press ENTER and select how you would like to enter your commands, then press ENTER again to return to the menu.
4. Move to M on the menu, select map 1 and press Q to return to the menu.
5. Move to P to commence the game.
6. See how good you are and repeat the game several times, you will have to start in a different place for each one. By moving to M on the menu you can select another one of the maps with different obstacles to overcome.

ACTIVITY TWO

1. Move to S on the menu. Stay with game 1 but this time select to use bearings (1). Press Q to return to the menu and if you need to remind yourself how to use bearings press I on the menu (The instructions).
2. Move to P to commence the game starting with map 1 again.
3. See how accurate you can become with as few turns as possible. By moving to M on the menu you can select another one of the maps to try.

ACTIVITY THREE

1. Move to S on the menu and select game 2. Press ENTER and select to use points of the compass (2).
2. Press Q and return to the menu before moving to P to commence the game. Always try to take the shortest route to the treasure. Try the different maps again. You can challenge a friend to reach the treasure in a shorter route than you can manage. Good luck!

ACTIVITY FOUR

1. move to S on the menu and select to use bearings (1)
2. Press Q to return to the menu before moving to P to commence the game.

How well can you do now on the different maps?

ACTIVITY FIVE

1. Move to S on the menu and select game 3. Press ENTER and select to use points of the compass (2). Press Q to return to the menu..
2. Move to P to commence the game. To find the treasure watch the

distance given on the right of the screen and move so that it is reducing. The distance given is a straight line distance and may increase as you negotiate round obstacles.

How well can you do now on the different maps?

ACTIVITY SIX

Play game three but this time using bearings (1). Happy treasure hunting.

48 HOURS

Having read the instructions, I on the menu , test your knowledge of place names by moving to N. How well can you do?

ACTIVITY ONE

Move to E on the menu and test your skill estimating distances between towns. Keep a record of your estimates and how far you were out. Try iton your Dad. Is he any good at it?

ACTIVITY TWO

1. Move to P on the menu to play the game. In deciding what method of travel to use remember:
 - a) Road travel is slow but cheap and a larger number of places are available to visit.
 - b) Rail travel is more expensive but faster and you can still get to a number of towns.
 - c) Air travel is the most expensive but is limited to the major cities, it is very fast though.
2. Choose the method of travel you want to use and move the cursor before pressing ENTER.
3. Use the cursor again to decide where to go before pressing ENTER.
4. The town you have gone to may have a letter for the towns name you are trying to find. Before you get all the letters, can you decide where it is? Write down your guess and see if you were right.
5. Move from town to town using steps 2 and 3 above. Keep an eye on the time and money you have left. You may have to change your method of travel as the money runs out and go to closer towns as the time runs out.
6. Challenge a friend to get all the letters and have more money and time left than you did. Good luck!

WOOD

ACTIVITY ONE

1. Following the instructions given place four **diseased** trees in the top left hand corner of the wood by pressing D and operating the cursor controls.
2. Press Q when you have finished.
3. Leave the chance of the disease spreading at a probability of 0.5 (a one in two chance) and also leave the chance of the tree surviving at the 0.5 probability.
4. Using the cursor controls change the time the disease lasts to two months.
5. Run the program for 12 months. Record how many diseased, healthy and immune trees you have .

ACTIVITY TWO

1. Re-run the program as before but this time after three months has gone by clear a line of trees around the affected area, which is what forester might do.
2. Continue the program for the remaining nine months and compare the state of the wood to that at the end of activity one.(You can show how effective clearing around the affected area is by clearing around the four diseased trees at the beginning of the program.

ACTIVITY THREE

1. Establish the wood as before but this time alter the probability of the disease spreading to 0.8. (There is now a greater chance of it spreading).
2. Run the program as before and compare the results.

ACTIVITY FOUR

Return the probability of the disease spreading to 0.5 and change the chance of the tree surviving to 0.8 (more trees should now become immune as you run the program). Many plants, including trees, slowly build up an immunisation against disease, and foresters replace stock with trees that have more natural protection. See what results you get.

ACTIVITY FIVE

Re-run the program in the same way as before but alter the probability of the disease spreading to 0.2, and then the chance that the tree will survive to 0.2. Compare your results.

ACTIVITY SIX

With a disease that lasts for two months, by changing the probabilities find the most useful balance for the forester. What conditions are best for him in reducing the damage to the wood ?