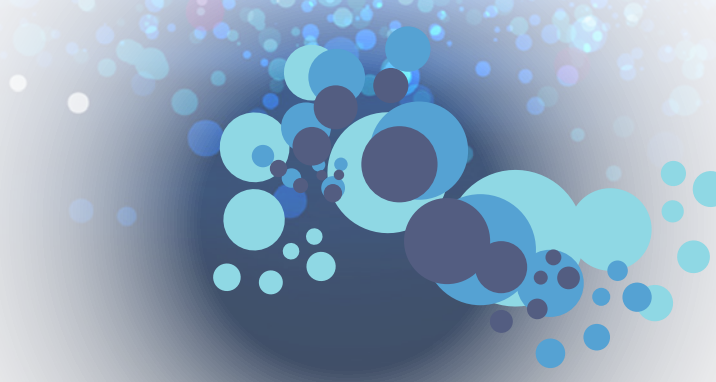


Tour of an IDE

Teacher's Notes

Lesson Plan

| Length | 60 mins | Specification Link | 2.1.7/f | Programming languages |
|--------------------|--|--|---------|-----------------------|
| Learning objective | Students should be able to (a) describe common tools and facilities available in an integrated development environment (IDE): editors, error diagnostics, run-time environment, translators, auto-documentation | | | |
| Time (min) | Activity | Further Notes | | |
| 10 | <p>Ask the students how often they get no spelling or grammar mistakes in work they do for subjects such as English or History.</p> <p>Ask them if they still get a mark for the work even though there are spelling and grammar mistakes.</p> <p>Ask them how they would feel if they got no marks for even the smallest error.</p> <p>Stress that computers are not as understanding teachers and that they will refuse to run a program if it has a grammar (syntax) error.</p> <p>Therefore we need all the help we can get when we are writing computer programs.</p> <p>Using a projector display the Starter Activity and go through it with the students.</p> <p>Show students the link to the specification. Explain the purpose and objectives of the lesson.</p> | | | |
| 15 | Watch the set of videos. | | | |
| 5 | <p>Ask some questions about the video to assess learning. e.g.</p> <ul style="list-style-type: none"> • What is an IDE? • What components would you expect to be included in an IDE? | <p>It is a software application that provides facilities to computer programmers for software development.</p> <p>It typically consists of a source code editor, debugger, compiler or interpreter and may have a graphical interface (GUI).</p> | | |
| 20 | <p>Worksheet 1</p> <p>Students to complete Worksheet 1 either on paper or on computer using knowledge gained from video and internet research.</p> <p>Ask individual students for their answers and discuss with the class so that all students have the correct answers entered on their worksheets.</p> | Answers provided. | | |
| 5 | Students carry out the Interactive Activity to consolidate learning. | | | |



| Time (min) | Activity | Further Notes |
|------------|---|---|
| | Extension Challenge/Homework <ul style="list-style-type: none">The students should complete and submit Worksheet 2 | |
| 5 | Plenary <p>To get the students to think about the implications of an integrated development environment tell them that they have all used them in the past.</p> <p>For example, a relational database management system (RDMS) such as Microsoft Access is a type of IDE.</p> <ul style="list-style-type: none">Ask the students to list the integrated components of an RDMS.Ask them to think of Word as an IDE and think up the individual tools incorporated in it. | Table, query, form and report creators. e.g. text editor, raster graphics editor, drawing tools etc. |



WORKSHEET 1 ANSWERS

1 Explain what is meant by an 'integrated development environment' or IDE.

It is a software application that provides facilities to computer programmers for software development.

It typically consists of a source code editor, debugger, compiler or interpreter and may have a graphical interface (GUI).

2 Explain what each of the following components of an IDE are used for and the facilities you would expect them to provide.

(a) Source code editor

This is a text editor designed specifically for the writing and editing of source code for computer programs.

They should provide facilities such as:

Syntax highlighting

This displays source code in different colours and fonts according to the category of terms, e.g. variables and string literals.

It improves the readability of the text and makes it easier to spot if a delimiter such as a bracket or quote mark has been omitted.

Autocomplete or word completion

This involves the source code editor predicting a word or phrase that the user wants to type in without the user actually typing it in completely e.g. if the user types a 'p' the editor might suggest the word 'print'.

Bracket matching

This is a syntax highlighting feature that highlights matching sets of delimiters such as brackets or quote marks. The purpose is to help the programmer navigate through the code and also spot any that do not match.

Auto indentation

This feature will automatically indent the next line if it is required when the Return key is pressed. In some languages indentation is a requirement.

(b) Debugger

This is used to test the code and highlight and remove programming errors. When an error is found, it will show its location in the code.



WORKSHEET 1 ANSWERS

2

Step by step or single-stepping or often referred to as **Animation**

This allows the code to be run and inspected one line at a time.

It allows the effects of that single statement or instruction to be evaluated in isolation.

Breakpoints or pauses

This is the intentional stopping of the program at a specified place so that the programmer can inspect the code and see if the programme is functioning as expected up to that point.

It is useful if there is an overall problem so that the code can be tested bit by bit.

Variable tracing

This feature allows the programmer to see the values of variables at any stage in the running of the program. They can see if they are as expected.

(c) Compiler or interpreter

This converts the code into machine code so that the program can be run in the realtime environment (a sort of virtual computer) in the debugger.

(d) Auto documentation

This feature allows the automatic documentation of all the variables and modules used in a text or XML (Extensible Markup Language) file.

This is especially useful when teams of programmers are working on the same project to ensure that they all understand the coding.



WORKSHEET 2 ANSWERS

1 A student has been asked to write the code for a program to calculate his weight on different planets on which the gravity is different to that on earth.

He is using a simple text editor to write this code but someone has suggested that he use an integrated development environment (IDE).

(a) State what is meant by an integrated development environment (IDE). (1)

It is a software application that provides facilities to computer programmers for software development.

(b) State *two* facilities that you would expect to be present in the source code editor of the IDE that are not offered by a simple text editor and explain the function of each. (6)

Any two from:

Syntax highlighting

This displays source code in different colours and fonts according to the category of terms e.g. variables and string literals.

Autocomplete or word completion

This involves the source code editor predicting a word or phrase that the user wants to type in without the user actually typing it in completely.

Bracket matching

This is a syntax highlighting feature that highlights matching sets of delimiters such as brackets or quote marks. The purpose is to help the programmer navigate through the code and also spot any delimiters that do not match.

Auto indentation

This feature will automatically indent the next line if it is required when the Return key is pressed. In some languages indentation is a requirement.

(1) for name and (2) for explanation of each.

(c) Apart from a text code editor, state *two* other components you would expect to find in an IDE. (2)

Debugger, compiler/interpreter, auto-documenter.