

Choosing your options

BTEC ICT vs Computer Science

The Differences

One of the main differences between Computer Science and Btec ICT is the amount of **Controlled Assessment** vs. **Written Exams**.



Another key difference is the **content**. Computer Science is more theoretical and is taught primarily using a textbook (a bit like maths or science).

Whereas BTEC ICT is mostly computer-based practical work.

Exam vs Controlled Assessment

1. **Controlled Assessment** is when you complete a set task over a number of months. Each lesson, you will do a small portion until you finish it. This is suitable for people who don't work well under pressure and prefer to have the work spread out over a long period of time.



Exam vs Controlled Assessment

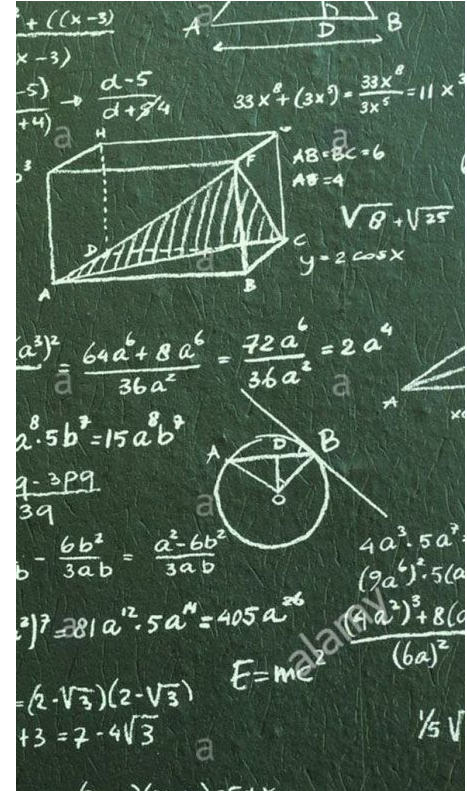
2. **Exam** is when you study the content of the subject in class, and then sit a written exam at the end of year 11 which will test your knowledge of what you have studied.

This is suitable for people who work better under pressure of the exam and are confident they will recall (in a short time) the material they have studied over the course of year 10 and 11.



Computer Science

1. You study for 2 years from a textbook.
2. You sit 2 exams at the end of year 11.
3. Your final grade will be determined by how you perform in these two exams
4. Each exam is worth 50% of your final grade.
5. There is no Controlled Assessment/Coursework.
6. A typical lesson: Teacher goes through a topic from the textbook and you complete a worksheet in class and another one at home.
7. Having **excellent Maths skills** is a key component in the course, without which you will struggle.
8. This course is suited to people who prefer sitting exams.



BTEC ICT



1. You complete 2 pieces of Controlled Assessment
2. You sit 1 exam in the middle of year 11.
3. Your final grade will be determined by the controlled Assessment as well as the exam.
4. The exam is worth 30% and the 2 pieces of Controlled Assessment is worth 70%.
5. A typical lesson: Write a detailed review or evaluation of a piece of work you have done such as a graphical user interface.
6. This course is suited to people who prefer working on the Controlled Assessment.
7. Having **excellent written skills** is a key component in the course, without which you will struggle.
8. The first controlled assessment starts **within 1 week of starting Year 10** and it gets submitted to the exam board on **December 1st!** So be prepared to work hard - It's an intense 3 months!

What should you base your decision on?

- Many students think what they choose at GCSE must be related to their future careers.
- This is not true. Your GCSE will help you choose the next stage of your education, eg A-levels.
- When you graduate from university and apply for a job, employers will not look back at what GCSEs you picked.
- In fact they don't even look at your A-Levels in most cases.
- Some employers will not even mind which Degree you study at university, as long as you get a good grade.
- For example, you could study Maths at university, and if you get a good grade, you could become a Pilot, Accountant, Investment Banker, Engineer, or a Games Designer.
- Therefore you must make your choices based on how well you think you will do and which subjects you will enjoy the most.

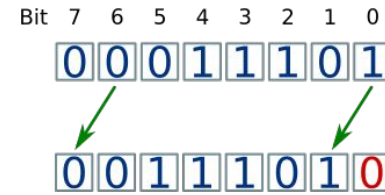
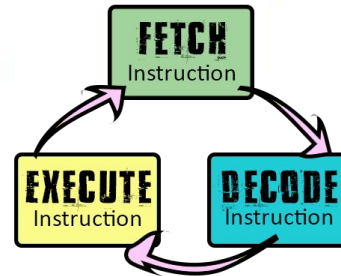
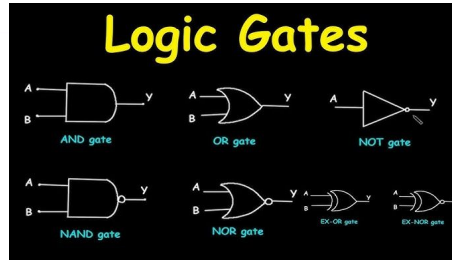


Topics Covered in Computer Science

J277/01: Computer systems

This component will assess:

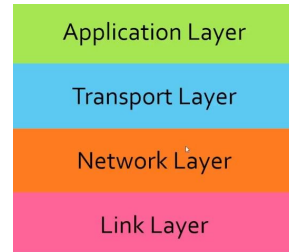
- 1.1 Systems architecture
- 1.2 Memory and storage
- 1.3 Computer networks, connections and protocols
- 1.4 Network security
- 1.5 Systems software
- 1.6 Ethical, legal, cultural and environmental impacts of digital technology



J277/02: Computational thinking, algorithms and programming

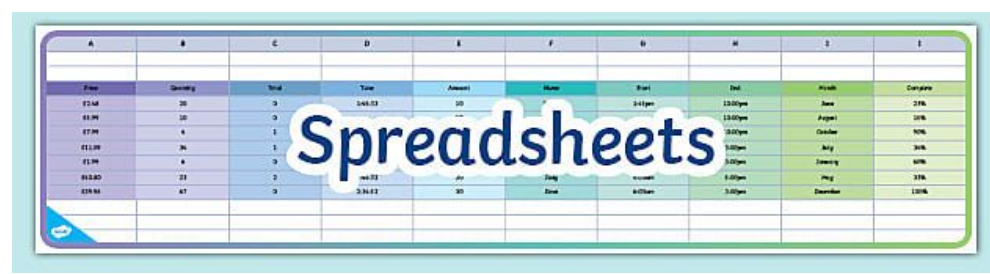
This component will assess:

- 2.1 Algorithms
- 2.2 Programming fundamentals
- 2.3 Producing robust programs
- 2.4 Boolean logic
- 2.5 Programming languages and Integrated Development Environments



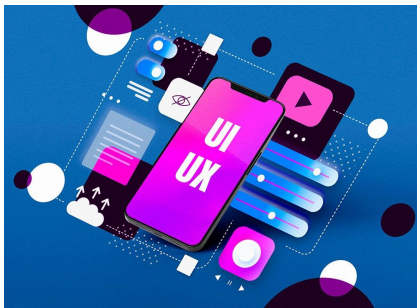
Topics Covered in BTEC ICT

- Types of user interface
- Hardware and software influences
- Accessibility needs
- Design principles
- Project planning techniques



	A	B	C	D	E	F	G	H	I
Price	Quantity	Total	Time	Amount	Name	Rate	End	Month	Complete
£2.00	20	3	146.53	20	John	£100	12/01/20	Jan	25%
£1.50	10	3					12/02/20	Feb	15%
£7.00	6	1					12/03/20	Mar	10%
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£1.00	6	3					12/05/20	May	60%
£0.80	21	2					12/06/20	Jun	35%
£20.00	67	3	234.53	20	John	£100	12/07/20	Jul	100%

- Spreadsheets - formulas, functions, sparklines, pivot tables
- Characteristics of data and information
- Data processing methods



A few sample Computer Science Exam Questions

(b) State the output from the following lines of program code.

(i) `print(first.length)`

..... [1]

(ii) `print(second.length DIV 3)`

..... [1]

(iii) `print(3 ^ 2)`

..... [1]

A few sample Computer Science Exam Questions

The function `checkblock()` checks whether a square on the board has been filled. When `checkblock(4,2)` is called, the value "A" is returned.

```
function checkblock(r,c)
    if gamegrid[r,c] == "A" or gamegrid[r,c] == "B" then
        outcome = gamegrid[r,c]
    else
        outcome = "FREE"
    endif
    return outcome
endfunction
```

A few sample Computer Science Exam Questions

(d) The hotel has nine rooms that are numbered from room 0 to room 8.

The number of people currently staying in each room is stored in an array with the identifier `room`.

The index of `room` represents the room number.

Array `room`

Index	0	1	2	3	4	5	6	7	8
Data	2	1	3	2	1	0	0	4	1

The following program counts how many people are currently staying in the hotel.

```
for count = 1 to 8
    total = 0
    total = total + room[count]
next count
print(total)
```

When tested, the program is found to contain **two** logic errors.

Describe how the program can be refined to remove these logic errors.

A few sample Computer Science Exam Questions

(b) Users can access websites from the library computers.

Complete the description of accessing websites using the given list of terms. Not all terms will be used.

- 0
- 1
- 127
- 128
- 255
- 256
- Colon
- Domain Name Server
- Embedded systems
- File server
- Full stop
- Hyphen
- Internet protocol
- MAC address
- Router
- Uniform Resource Locator
- Web server
- Clients

A website is hosted on a The computers that access the websites are called

The user enters the into a web browser. The web browser sends a request to the for the matching IP (Internet Protocol) address. If found the IP address is returned. A request is then sent to this IP address.

An IPv4 address is made of 4 groups of digits. Each group can be between the denary values and The groups of digits are separated by a

A few sample Computer Science Exam Questions

A program is being created to convert the data capacity of a storage device into a different measure.

The function, `calculate()`, takes the measurement (e.g. gigabytes) and the number (e.g. 2) as two parameters. It then returns the value in bits. The function returns -1 if an invalid measurement was entered.

Complete the function `calculate`

```
function calculate(....., number)

    if measurement == "gigabytes" then

        value = number * 1024 * 1024 * 1024 * 8

    elseif measurement == "....." then

        value = number * 1024 * 1024 * 8

    elseif measurement == "....." then

        value = number * 1024 * 8

    elseif measure == "bytes" then

        value = number * .....

    else

        .....

    endif

    return .....

endfunction
```

A few sample Computer Science Exam Questions

The area of a circle is calculated using the formula $\pi \times r^2$ where π is equal to 3.142 and r is the radius.

A program is written to allow a user to enter the radius of a circle as a whole number between 1 and 30, then calculate and output the area of the circle.

```
01  radius = 0
02  area = 0.0
03  radius = input("Enter radius")
04  if radius < 1 OR radius > 30 then
05  print("Sorry, that radius is invalid")
06  else
07  area = 3.142 * (radius ^ 2)
08  print (area)
09  endif
```

A few sample Computer Science Exam Questions

(c) State **four** characteristics of secondary storage devices that Nina should consider when choosing a device.

- 1
- 2
- 3
- 4

(c) Identify **three** devices, other than a Sat Nav, which contain embedded systems.

- 1
- 2
- 3

A few sample Computer Science Exam Questions

(c) Explain the effect of performing a 2-place shift to the right on the binary number 11001011.

.....
.....
.....
..... [2]

The owners of a large bakery have a Local Area Network (LAN) with a star topology. They order their supplies over the Internet. When data is transmitted from the bakery to the supplier, network protocols are used.

(a) Define what is meant by a 'network protocol'.

.....
..... [1]

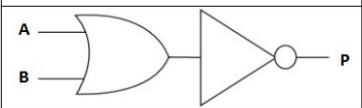

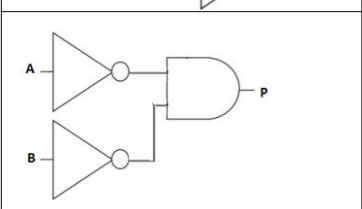
A few sample Computer Science Exam Questions

Discuss the impact of people wanting to upgrade to the latest smartphone.

In your answer, you might consider the impact on:

- smartphone users
- cultural issues
- ethical issues
- environmental issues.

(b) Tick (✓) **one** box to identify the correct logic diagram for $P = \text{NOT}(A \text{ AND } B)$.

$P = \text{NOT}(A \text{ AND } B)$	Tick (✓) one box
	
	
	

A few sample BTEC ICT Exam Questions

PublishShare's customers require an account to buy products. Their account contains personal information.

- (b) Describe how PublishShare would ensure they comply with data protection laws when passing this information to another company.

- 3** Chocawoca is a confectionery manufacturer that makes high quality sweets and chocolates that they sell in their shops and online.

Chocawoca's recipes are protected by intellectual property rights.

- (a) Explain **one** way that Chocawoca can use intellectual property rights to protect its recipes.

GudgeTech Ltd wants to introduce a video streaming service to provide content for their devices.

- (c) Explain **one** reason why 'Net neutrality' helps new companies compete with more established video streaming services.

- 4** GudgeTech Ltd is a technology development company that makes a range of digital systems, devices and apps.

- (a) GudgeTech Ltd test the security of their digital systems.

Explain **one** way a company could perform penetration to test the security of a digital system.

GudgeTech Ltd use device hardening to improve the security of their systems.

- (b) Explain **one** reason why device hardening improves system security.

Sample BTEC ICT Controlled Assessment

https://drive.google.com/drive/folders/1NFJsQggEdDWg23i2OeGO5AzBwrX5_o3?usp=sharing

Component C - My Interface Evaluation

The strengths and weaknesses of my user interface:

How well the user requirements have been met and talk about how well your final interface meets those requirements.

The user requirements were met because the **colour scheme** was consistent throughout the interface and the **images or icons** used from the internet were used by keeping the Copyright law. The **navigation** for the users would be easier because the 3 additional help features were included and the side buttons are consistent throughout the interface so the users can easily navigate every page of the interface as they can go to another page by tapping on the side buttons. However, the **font size** in the map is smaller, which would create difficulties for visual needs and they can zoom in and out by tapping the zoom icon at the bottom that would allow the user to zoom by 25% or using their two fingers on the screen that would make the screen as much zoomed as the user wants as there is no percentage on how much the user can zoom in so they can read the writing clearly.

How is the user interface easy to use and suitability for audience and purpose ?

The user interface can be easily navigated because the main buttons are placed big in the home page and little smaller in other pages as side buttons so that the user can navigate to another page without any delay of time. There are features such as speakers, zoom in and out, language that would be suitable for users who have accessibility needs, which would make it easier to operate the page buttons. The buttons would be big enough for users with motor needs, so the users wouldn't have difficulties to move their hands all if the buttons were small and these features would allow all kinds of users to easily interact with the interface. The user interfaces are placed around the wembley stadium that would help the users to know their location through the map of wembley stadium.

How effectively the design principles have been met - principles in your interface design.

In my interface, I have included some design principles such as colours, layout, use of language. These principles would allow the interface to be appropriate for the user to interact with. The colours blend well with each other that doesn't give any visual problems such as the users can't see the writing clearly due to the colours being clashing. The layout of the buttons are the same in every screen so that the users can easily navigate to another page without going back to the home page and they would know easily where to get help or move to another page as the layout of the side buttons and 3 help buttons are similar in every page. The help buttons, side buttons and banners are consistent throughout the interface making it easier for the users to know how to navigate through the page. The use of language can be understandable for every age group as the language is simple and easy to understand but if the users want to change the language due to them having problems reading the language which is present in the page they can change by tapping on the language icon at the bottom right.

The strengths and weaknesses of my project planning techniques:

Screen 1 HOME PAGE

Screen 1 : Home

Navigation - The user can easily navigate through the interface by the icon image that is provided beneath the heading because the icon image would help the user to know what the heading is about and the user can quickly recognize the option before looking at the heading or going into the option. It also includes help buttons at the bottom of the screen for users with accessibility needs so they would be able to use the interface without any complications and it could help them to interact with the interface more easily as in every screen these buttons are present. These buttons are zooming in and out, language, speaker icon which would help the users so they can navigate through the interface freely as these options provide them additional help such as zooming in and out gives opportunity for them to read text that they aren't able in the screen as it might be small and the speaker icon gives the information which is present in the screen so they would know what to do. There is another option, language which allows the user to change the language in the screen to any other language that would be easier for them to understand. When the user taps on the language option they will see a pop-up box that will have many languages to every user can interact with interface without any complications.

Colour - The colour scheme is blue, black and grey so in every screen these colours would be used but the screens may have different colours which are not in the colour scheme because for the users with visual needs there would be colours that contrast as it would make it easier for them to see. The contrast colours would help them to clearly see the text as the colour of the background is different to the text colour so the users can easily can read and understand the information as the colours don't clash with each other. The colour scheme can be used in screens as these colours blend well with each other and would not create any complications for them to interact and there would be images/icons that would not blend with the background then the colour would change. The screen would have space as there aren't any more options that would be included in home page.

Font style and size - The font style is the same throughout the interface as use of different font styles it would create difficulties such as some users may not be able to read the text clearly so they won't be able to interact with the interface, such as if the interface included decorative styles then it would be complicated for the users to read and understand the text. The size of the fonts will be big as it would help the users that aren't able to view small size and the title would be in bigger font size then any other options on the screen as it is a welcome message. The font size of the languages listed in a pop-up box on top of the language icon.

Assets - The images and icons used in this interface helps the user to know what the heading is about as some users may not know what they will find in the inside the bottom so the image represents the heading which the user can easily understand and they won't get confused on what is written on the screen. Furthermore, the user can't clearly by the image there are 3 buttons at the bottom on the provide screen which they can choose language option as they can figure out by the provided images. The logo of Wembley Stadium is presented at the top right corner of the screen and the image of Wembley stadium at the centre of two options to show that they are navigating a interface related to Wembley stadium so they would only find information related to it. The images presented in the screen may be blurry for some users they can zoom in on the screen the option given at the bottom of the screen.

Layout - The layout the homepage is done by having the title or 'Welcome' written at the top centre of the page and on the right there is Wembley Stadium logo and three options icon at the bottom right corner. These positions for these three layout will be same on each screen as they know where is the additional help icons and the title to let them know what they will find on the screen. The image of Wembley Stadium is underneath the title and the other four main buttons are placed around the image, which also included the image underneath the heading.

Gantt Chart & Resources

The Gantt Chart below shows the tasks that will be done in 4 weeks and also it includes dates to show the duration of the task as how long it will take to complete. The Gantt Chart is important because it shows the schedule of my tasks and the blank spaces are for me to catch up on any tasks that need to be completed, and these blank spaces are on Saturdays and Sundays. Also, I have contingency for 2 days at the end of the tasks but before showing it to the manager so I would have more time on any tasks that are required to be completed as it was delayed. In the Gantt Chart, there is a column for the resources needed in that specific task as it is required for doing that task, such as when getting feedbacks the resources I need is a notebook to write the ideas given by the manager for my improvements and for moodboard or storyboard I use the laptop for Microsoft Word and Powerpoint to create the task. In between the tasks, there is a checkpoint which reminds me that I have to review all the tasks done in the previous week that are up-to-date and it doesn't need any improvements. The Gantt Chart helps me to complete the tasks in the limited duration for my project to be completed and there is a reviewpoint when meeting the manager once as I can't continue without the manager's approval.

Mood Board

The purpose of my moodboard is the image of the stadium to know my ideas for the interface, such as the colour scheme, signs that would be helpful for the people and the map of the stadium. The mood board would be more helpful the people as these are ideas that would be inputted in the touch interface so if there is any mistakes then the manager would advise me on that idea and I would make a change so that the ideas on the mood board suitable for everyone, even the accessibility needs. The mood board includes ideas that I will show to the manager and the manager would give feedback on how successful my ideas are or on what I

So....What will you pick?

- You can't choose both together.
- You don't have to choose either one.
- But if you choose either one, make sure you are aware what the course entails.
- It might be quite different from year 9 ICT, so ask your teacher if you are unsure.