Y12 level 3 - summer 2021 BTEC IT work pack

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Introduction

Please use the summer break to do independent work to put yourself in good stead for return in September for year two of your level 3 IT course.

Unit 3 – Using Social Media in Business is completed and externally verified.

Unit 1 – Information Technology Systems is complete as you have taken a mock exam. Pleas ensure you **do not delete your work on this unit** and likewise your exam scripts will be kept secure by us in case they need to be seen by an external standards verifier.

Course Units

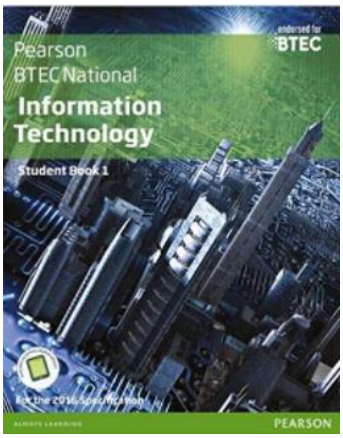
BTEC Level 3 in IT	
Unit 1 – Information Technology Systems	• External exam cancelled • Internal mock exam taken
Unit 2 – Creating Systems to Manage Information	• Unit started June 2021 • Need to continue this unit in September 2021 • Need to prepare for exam in January 2022
Unit 3 – Social Media in Business	• Completed unit. No more work to be done on this unit.
Unit 6 – Website Development	• Coursework unit • To start in June/July 2021 • Continue in September 2021. • Need to be completed by March 2022. • **Unit will be called up** by external moderator for inspection in 2022, before the end of the course.

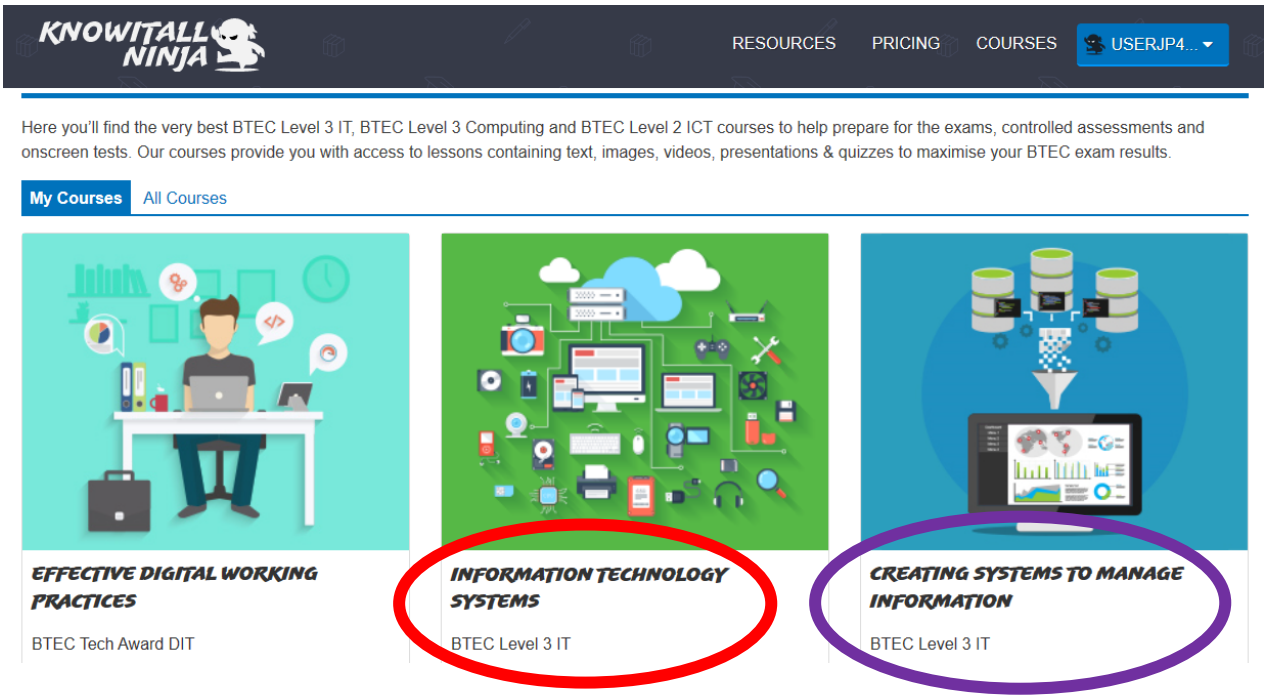
Know It All Ninja revision website

You have all received your own copy of student textbook for Level 3 BTEC IT. You have all been given access to the Ninja website which will be your main source of revision for this course during summer. This platform is built for this course, so it contains everything that is needed to know for this course.

Pearson BTEC National Information Technology

You have all received this student book which covers the four units of this course. You must use this as your main study book and source of revision. Together with the Know-It-All Ninja platform, you have been given excellent resources for this qualification.





Revision timetable - example

You can follow this timetable to ensure that you complete revision for unit 2 and unit 6.

Week	Unit	Topic	Know It All Ninja link
1	2	Relational Database Management Systems	https://www.knowitallninja.com/modules/relational-database-management-systems/
2	2	Normalisation	https://www.knowitallninja.com/modules/normalisation/
3	2	Relational Database Design	https://www.knowitallninja.com/modules/relational-database-design/
Week	**Unit**	**Topic**	**Pearson BTEC IT book**
4	6	Understand the principles of website development	Pages 336 – 344. Read and make notes. Do the research activities on pages 337, 338, 34, 344
5	6	Design a website to meet client requirements	Pages 345 – 359. Read and make notes. Do the research activities on pages 346, 352, 356

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Unit 2 – Creating systems to Manage Information

Unit 2 is a practical unit which is evidenced through a 5-hour exam (3 hour and 2 hour) in January 2022. It is very important that you increase your confidence and skills in using Access database. This is the software that will be used in your unit 2 computer exam in January 2022. Practice is important for you to become familiar with the features and functions of the software, to be able to complete all sections of the exam to a Distinction level.

Please complete the revision in Know-It-All Ninja website as shown in the revision timetable above.

Know it All Ninja revision website

Please complete the quizzes once you have read and studied the sections.

Key terminologies

Ensure you understand these key terminologies and their alternative names so you are familiar with them all and can use them synonymously.

keyword	synonym	synonym
Record	Tuple	Row
Field	Attribute	Column
Table	Entity	
Relationships	Links	
Primary key	Key field	

Keywords and terminologies covered so far:

Describe what each means:

keyword	Meaning
RDBMS	
Data type	
Foreign key	
Composite key	
Candidate key	
Normalisation	
ERD	
Data redundancy	
Data integrity	
Validation	
Validation rule	

Validation methods	
Field size	
Input mask	
Naming convention	
Referential Integrity	
Is Not Null	
Query	
Query criteria	
Query parameter	
Wildcard query	
SumIIF	

Access database skills taught so far:

- Creating tables
- Naming conventions
- Validation methods including:
    - Field size
    - Is Not Null
    - Validation rules e.g. Using Boolean Or
    - Drop-down lists (Value lookup)
    - Input masks
    - Range check
    - Error messages
- Creating relationship between tables (ERD)
    - Enforcing referential integrity
- Creating queries
    - Searching using multiple criteria
    - Searching using Boolean Or, And
    - Searching using parameters
    - Searching using wildcards
- Creating report
    - Basic report design
    - Adding calculated field

You need to continue using Access database to practice these skills and to learn new skills. Please watch YouTube tutorials to learn how to use Access. Below are two examples.

- Creating queries - https://www.youtube.com/watch?v=LUL1nnxUz_c
- Linking tables - https://www.youtube.com/watch?v=g4geW2Ybky8

Unit 2 PLC

This is the plc for the whole of unit 2. As we have only recently started learning this unit, there is no expectation for you to know all the below, so please do not complete this plc over summer. This is just to inform you of all the topics you will have to learn about from September to December to be able to complete the exam in January 2022.

topic	Red	Amber	Green
A: The purpose and structure of relational database management systems			
A1 Relational database management systems			
o relational data structures – relation, attribute, domain, tuple, cardinality and relational database			
o relational algebra sets – symbols, union, intersect, join, select			
o database relations – entity relationship, generic, semantic			
o relational keys – super key, candidate key, primary key, foreign key			
o integrity constraints – entity integrity, referential integrity			
o entity relationships – one-to-one, one-to-many, many-to-many.			
A2 Manipulating data structures and data in relational databases			
Use of RDBMS software tools and structured query language (SQL) for defining, modifying and removing data structures and data			
• updating, inserting, deletion			
• retrieval of data for queries, reports			
• administration of users			
• security, integrity, recovery.			
A3 Normalisation			
The role of normalisation to develop efficient data structures:			
• anomalies – update, insertion, deletion			
• primary keys, foreign keys, composite keys			
• indexing			
• referential integrity			
• data dictionary – tables, fields, data types, validation			
• cascading update			
• deletion techniques			
• joins, unions, intersects			
• stages of normalisation:			
o un-normalised form (UNF)			
o first normal form (1NF)			
o second normal form (2NF)			
o third normal form (3NF)			

topic	Red	Amber	Green
B Standard methods and techniques to design relational database solutions			
B1 Relational database design			
Selection of RDBMS and SQL software, tools, techniques and processes.			
• Database design: conceptual, logical and physical modelling and entity relationship modelling.			
• Relational algebra: one to many, one to one, many to many, AND, OR, NOT, >, <, ≥, ≤			
• RDMS and SQL software selection			
• Application design: user interface, software applications			
• Database implementation techniques: prototyping, data conversion, testing			
• Quality, effectiveness and appropriateness of the solution: correctness of data, relationships between data, data integrity, normalisation.			
B2 Design documentation			
The features and characteristics of relational database design techniques and their application to solve problems:			
• requirements of the brief (audience, purpose and client's requirements)			
• security and legal considerations:			
o Data protection legislation			
o The European Union (EU) Directive on Data Protection (legislation must be current and applicable to England, Wales, Northern Ireland)			
• data structure designs:			
o data dictionaries and their use: tables, field attributes, validation			
o use of naming conventions			
o entity relationship diagrams			
o normalisation			
• user interface design:			
o data entry/input – verification, validation, calculated fields, masks, directed input			
o reports – fields, queries, presentation of data, calculations			
o task automation – imports, updates, deletions			
• extracting and presenting data:			
o queries using multiple criteria, form values and wild cards			
o action queries			
o calculated queries			
o reports			
• design and use of test plans: to check correctness of data, functionality, accessibility, usability.			

topic	Red	Amber	Green
C Creating a relation database structure			
C1 Producing a database solution			
Select and configure appropriate RDBMS and SQL tools to produce a database solution to meet client's requirements:			
• creating, setting up and maintaining data tables			
• creating links, relationships between data tables			
• applying data validation rules			
• generating outputs – user-generated queries, automated queries, reports			
• user interface – navigation, data-entry forms, sub-forms			
• automated functions			
• populating the database:			
o importing			

o adding data			
o manipulating data			
• devising and using SQL statements to extract, manipulate and modify data			
C2 Testing and refining the database solution			
• Different types of testing: referential integrity, functionality, security.			
• Selection and use of appropriate test data: erroneous data, extreme data.			
• Recording appropriate test documentation.			
• Using testing outcomes to improve and refine a database solution.			

topic	Red	Amber	Green
D Evaluating a database development project			
The characteristics, concepts, impact and implications of testing methodologies to monitor and evaluate database design, the database created testing processes and success of the solution			
D1 Database design evaluation			
Evaluating a design against the given requirements:			
• use and application of an entity-relationship diagram, data dictionary, normalisation			
• coverage of functionality requirements and identification of any omissions			
• identification of design strengths and potential further improvements to meet given requirements.			
D2 Evaluation of database testing			
Evaluating the application of test data to ensure that the database solution meets requirements			
• Different types of testing:			
o normal test data			
o erroneous test data			
o extreme test data.			
• Recording of actual results and analysis.			
• Commenting on results			
• Test records:			
o completion of test records			
o taking of and storing screenshots of tests			
• Making use of testing outcomes			
• Using iterative processes to improve accuracy, readability and robustness.			
• Identifying and recording which tests were successfully met and which test data issues were not resolved.			
D3 Evaluation of the database			
Evaluating the software outcome against the given requirements.			
• Strengths and weaknesses of the database:			
o solution fitness for purpose			
o intuitiveness and ease of use			
o constraints of the database software used			
o maintainability of the database			
o extent to which database meets the given requirements			

Unit 6 – Website Development

As you have only just started this unit, it would be a great opportunity for you to get ahead by doing some research on website design principles. Section A in the Pearson book is about the design of websites. No two websites are the same, but overall, websites tend to follow design principles or conventions which ensure they meet certain requirements to be fit for purpose.

Pages 338 and 339 in the Pearson IT book are about the principles of website design. There are between 8 and 12 regularly used principles that should be included in the design of any website.

You can also find out more about this topic from the following websites:

https://webflow.com/blog/web-design-principles

https://wpastra.com/good-website-design/

https://cxl.com/blog/universal-web-design-principles/

HTML (Hyper Text Markup Language) is the scripting language used to create websites. Though very few websites are created today solely using HTML, it is important that you understand how to write or edit code written in HTML. You will probably be using Adobe Dreamweaver to create your websites for unit 6.

Use this tutorial to learn HTML:

https://www.w3schools.com/html/

If you can, also research and find out about CSS and JavaScript. This would really be helpful for your website development knowledge.

Use these tutorials to learn JavaScript and CSS:

https://www.w3schools.com/js/default.asp

https://www.w3schools.com/css/default.asp

Have a nice summer break and I look forward to seeing you in September.

Mrs Parkins 😊