

NATIONAL 5 EXAM REVISION

Convert the following numbers to binary

88

162

254

Convert the binary to a decimal number

10011111

01101101

How does a computer represent characters in a computer system?

Calculate the backing storage required for a 8-bit colour image 500 pixels by 400 pixels. Give your answer in Kilobytes.

Calculate the backing storage required for a 16-bit colour image 1200 pixels by 800 pixels. Give your answer in Megabytes

State the 3 parts the processor is made up from.

What job does the ALU perform?

What part temporarily stores values that are being processed?

NATIONAL 5 EXAM REVISION

Explain the difference between a compiler and an interpreter.

State the 2 buses you need to know about that connect the processor to main memory.

What bus is used to specify a memory location that needs to be written to?

Line 1 RECEIVE age FROM (INT) KEYBOARD

Line 2 WHILE age < 18 OR age > 65 DO

Line 3 SEND "Error: Re-enter age 18-65" TO DISPLAY

Line 4 RECEIVE age FROM (INT) KEYBOARD

Line 5 END WHILE

What kind of loop is this?

What standard algorithm is this?

What data type is the variable age?

What logical operator is being used? What does that do?

Explain what happens is a user enters 15?

NATIONAL 5 EXAM REVISION

SET name TO "John"

Describe what the above code is doing.

SET size1 TO 5

SET size2 TO 2

SET total TO size1 ^ size2

How is the total calculated in the example above?

What type of validation is used when...

A cost has to be between £10 and £50.

A password has to be greater than 6 characters long.

A username has to be entered into a field and cannot be left blank.

The user is given a list of options to choose from.

What does RAM stand for?

What does ROM stand for?

NATIONAL 5 EXAM REVISION

Jack has been asked to design a program to calculate the potential profit in a soft drink business. The program will store the costs involved in producing and selling one litre of each drink.

The following calculations will be used to output the profit made for each litre of drink.

$$\text{Manufacturing Cost} = \text{Water Cost} + \text{Flavouring Cost} + \text{Labour Cost}$$

$$\text{Profit} = \text{Selling Price} - \text{Manufacturing Cost}$$

- (a) State the number of variables Jack would require in his program. 1
-

- (b) Using pseudocode or a programming language of your choice, write a program to enter the required data, then calculate and display the profit for the soft drink business. 5

Pseudocode <input style="width: 40px; height: 20px;" type="checkbox"/>	OR	Programming Language <input style="width: 150px; height: 20px;" type="checkbox"/>

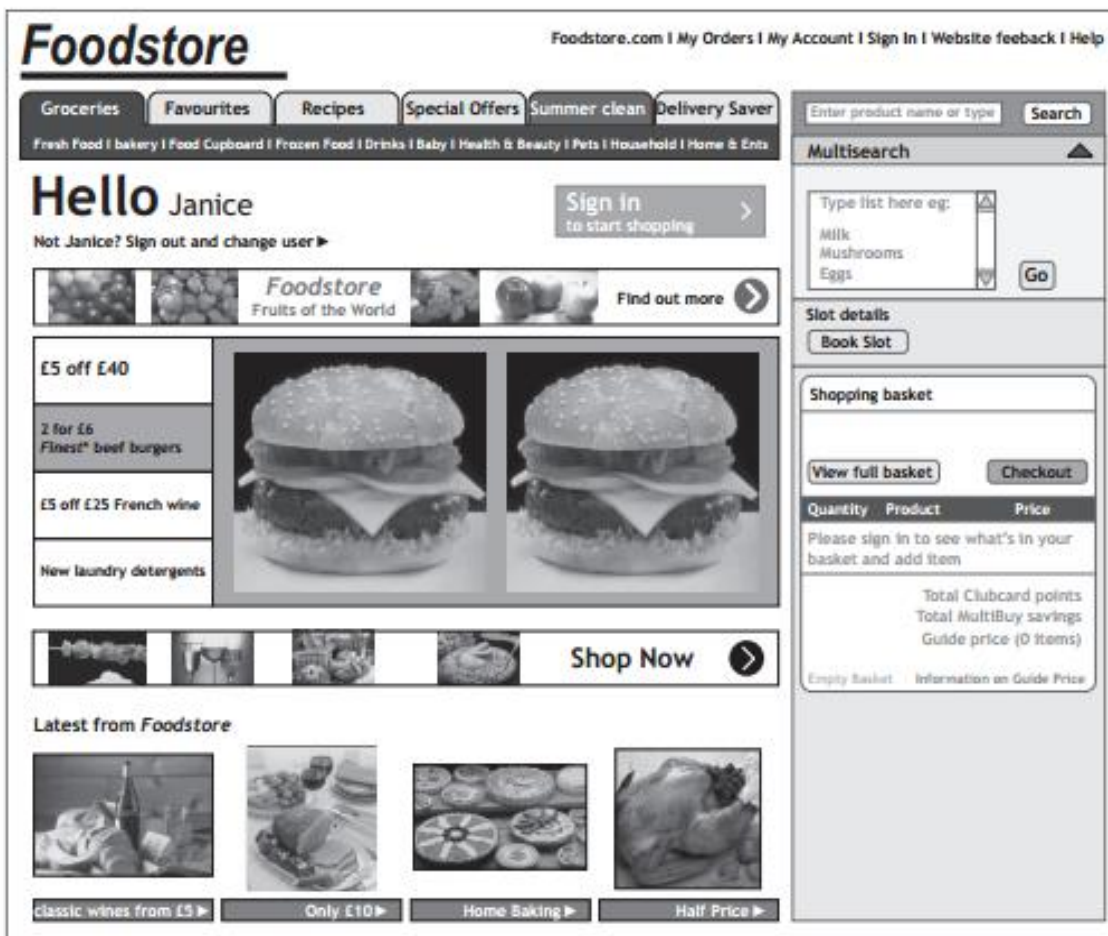
NATIONAL 5 EXAM REVISION

(c) Jack adapts the program to ensure that **water cost** can only be entered as always greater than or equal to £0.10 and less than or equal to £0.50 per litre.

(i) State the standard algorithm that is used to ensure that data entered is acceptable. 1

(ii) Complete the table below to show four different examples of test data for **water cost** and the type of each example. 3

Test Data	Type of Test Data
0.05	
0.45	normal
0.10	
	extreme



Reason 1

Reason 2

(a) The company has received complaints from some customers that the website is difficult to use on their tablet or smartphone.

Identify **two** reasons why the webpage above would be unsuitable for such portable devices. 2

NATIONAL 5 EXAM REVISION

21. BigTech Gadgets are organising an exhibition to showcase cutting edge developments in technology. BigTech Gadgets want to store the details of products being demonstrated by companies.

Some sample data is shown in the table below.

Exhibitor Code	Company Name	Area	Stand Number	Product Reference	Item Name	Price (£)
SG100	FutureTech	Tech Zone	22	GD101	3D Printer	1245
SG100	FutureTech	Tech Zone	22	GD102	3D Printer XL	1699
SG176	Digital80	Photo Zone	49	GD208	360 Camera	800
SG203	TechATive	Active Zone	123	GD187	GoJet	1300
SG203	TechATive	Active Zone	123	GD324	RollerJet	500
SG489	ABCMusic	Music Zone	234	GD387	Xkey	350
SG489	ABCMusic	Music Zone	234	GD367	Xkey Plus	500
SG512	HitechGaming	Games Zone	288	GD654	HowPower2	149

(a) To avoid data duplication, a database with two linked tables is proposed – EXHIBITOR table and PRODUCT table.

(i) List the fields/attributes that should be included in each table. 2

EXHIBITOR table	PRODUCT table

(ii) Identify the foreign key used to link the two tables. 1

(b) When implementing the database, BigTech Gadgets decide to include an image of each product.

Name the field **type** required to store an image. 1

NATIONAL 5 EXAM REVISION

1. A web page can use internal and external hyperlinks.

Explain the difference between an internal hyperlink and external hyperlink. 2

2. Gillian is viewing a website on her laptop. Name the software on Gillian's laptop that enables her to do this. 1

3. Calculate the backing storage required for an 8 bit colour image 400 pixels by 600 pixels.

Express your answer in Kilobytes. 3

4. Name the part of the processor that deals with comparisons. 1

NATIONAL 5 EXAM REVISION

9. Before going live with a new website, the developer makes sure it matches the original design. Describe **one** other type of testing that the developer should carry out. 1

10. Businesses and individuals are now making use of *cloud* services instead of local storage for storing their data.

State **one** benefit of using cloud based storage instead of local storage. 1

11. Hussain is a technician for a new company and has been asked to prepare a presentation on networks. State **one** difference between peer-to-peer and client/server networks that he could include in his presentation. 2

Client/Server	Peer-to-Peer

NATIONAL 5 EXAM REVISION

The photo gallery features a wide range of holiday images. A photograph is going to be added to the photo gallery.



Beach v1



Preview

Item Type: JPEG colour image
Date taken: 28/07/2010
Dimensions: 4000x3000
Bit depth: 24bits
File size: 4.5MB



Beach v2



Preview

Item Type: JPEG colour image
Date taken: 28/07/2010
Dimensions: 4000x3000
Bit depth: 8bits
File size: 2.61MB

The file called Beach v1 was altered using graphic editing software and saved as a Beach v2.

Explain why Beach v2 is being added to the photo gallery instead of Beach v1.

2

NATIONAL 5 EXAM REVISION

A search is carried out for holidays in Greece leaving from “Any London” airport after 1st May 2015.

Here are some of the matching holidays.

From	Resort	Departs	Price per person
Gatwick	Kefalonia	19/05/2015	£350-00
Gatwick	Corfu	30/05/2015	£325-00
Gatwick	Santorini	07/06/2015	£295-00
Luton	Zante	04/06/2015	£295-00
Stansted	Corfu	04/06/2015	£289-00
Stansted	Kefalonia	21/05/2015	£289-00
Gatwick	Kos	19/05/2015	£289-00
Luton	Halkidiki	03/06/2015	£250-00
Luton	Corfu	17/05/2015	£225-00
Stansted	Zante	28/05/2015	£225-00
Gatwick	Kos	12/06/2015	£199-00

Describe how the list is sorted.

2

NATIONAL 5 EXAM REVISION

18. An athlete is developing a mobile application (app).
The app will allow athletes to track weight in Kg.
Part of the pseudocode for this app is shown below.

```
.....  
.....  
Line 15 SEND "Enter your new weight" TO DISPLAY  
Line 16 RECEIVE newWeight FROM (REAL) KEYBOARD  
Line 17 IF newWeight > previousWeight [counter] THEN  
Line 18     SEND ["You have gained weight"] TO DISPLAY  
Line 19     END IF  
Line 20 SET previousWeight [counter] TO newWeight  
.....  
.....
```

- (a) (i) Identify the line that includes a condition. 1
Line _____
- (ii) Identify the line that stores a value in an array. 1
Line _____
- (iii) Identify the line that accepts input values into the program. 1
Line _____
- (b) When the code for the program is written the programmer mis-types the word UNTIL, typing UNTOL instead. 1
State the type of programming error being described above.

NATIONAL 5 EXAM REVISION

18. (continued)

- (c) The pseudocode is edited to ensure that the new weight being entered is acceptable.

```
....  
Line 16 REPEAT  
Line 17     RECEIVE newWeight FROM (REAL) KEYBOARD  
Line 18 UNTIL newWeight > 20 AND newWeight < 70  
.....
```

- (i) State the **type** of loop shown above. 1

- (ii) State an input **the user** could enter to enable the program to continue from line 18. 1

- (d) State another design notation that could have been used to design the app. 1

- (e) While the program is being implemented, the programmer stops occasionally to run the program.

State the type of translator you would recommend the programmer uses in this situation.

Explain your answer. 2

Translator _____

Explanation _____

NATIONAL 5 EXAM REVISION

14. Employees can only access their company network if they enter a correct username and password. A validation program is being developed and will run each time an employee logs on.

An extract of pseudocode from the program is shown below.

```
Line 1 RECEIVE userName FROM (STRING) KEYBOARD
Line 2 RECEIVE pinNumber FROM (STRING) KEYBOARD
Line 3 IF userName VALID OR pinNumber VALID THEN
Line 4     Allow access to network
Line 5 ELSE
Line 6     SEND "Access Denied" TO SCREEN
Line 7 END IF
```

An error is noticed when the program is tested.

- (a) Identify the line containing a logic error. 1

Line _____

- (b) State how this error should be corrected. 1

Describe **two** methods of improving the readability of code. 2

Method 1 _____

Method 2 _____

NATIONAL 5 EXAM REVISION

State the **data type** of the variable “password” in the code below.

```
...  
Line 12  SEND “Please enter your password” TO DISPLAY  
Line 13  IF (password <> “h1gh@sch001”) THEN  
Line 14      SEND “error: please re-enter password” TO DISPLAY  
Line 15  END IF
```

Describe why compression is used?

State two input devices.

State two output devices.

Describe what a database is?

What does WAN and LAN stand for?

What is JavaScript used for?

NATIONAL 5 EXAM REVISION

20. A supermarket has a flat file database storing information about the 20,000 products it stocks. Part of the database is shown below.

Dept ID	Dept Name	Department Manager	Product Code	Product Type	Product Name
4	Toiletries	H Green	100356	Toothpaste	Dentasparkle
10	Dry Goods	A Ahmed	204672	Cereal	Oatycrunch
6	Cleaning Products	F McMaster	318410	Shoe Polish	Shine
10	Dry Goods	A Ahmed	396039	Packet Soup	Mug-o-Soup
10	Dry Goods	A Ahmed	401284	Biscuits	Choco Snaps
4	Toiletries	H Green	672936	Shower Gel	Clean & Fresh
6	Cleaning Products	F McMaster	324221	Wipes	GermGo

(a) The design structure of the database looks like this.

Field Name	Field Type	Field Size	Validation
Dept ID	Number	2	>0 and <11
Dept Name	Text	20	
Department Manager	Text	20	
Product Code	Text	6	Required
Product Type	Text	20	
Product Name	Text	20	

Name two types of validation that could be applied to the field Product Code.

2

Validation 1 _____

Validation 2 _____

(b) The supermarket decides to change the name of the “Cleaning Products” department to “Household Products”. Describe a potential problem when changing this data in a flat file database design.

1

NATIONAL 5 EXAM REVISION

Question 20 (continued)

(c) A decision is made to modify the design of the database to *linked tables* with two tables: DEPARTMENT and PRODUCT. Each table will have a *primary key*.

(i) State the purpose of a primary key.

1

(ii) Identify a suitable primary key for each table.

2



DEPARTMENT _____

PRODUCT _____

(d) Three new fields

Product In Stock, Product Picture and Product Price

are to be inserted into the PRODUCT table as shown below.

Product Code	Product Type	Product Name	Product in Stock	Product Picture	Product Price
100356	Toothpaste	Dentasparkle	True		1.99
204672	Cereal	Oatycrunch	False		2.45

Name a suitable *field type* for the following new fields.

2

Product In Stock _____

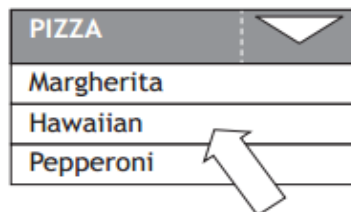
Product Picture _____

NATIONAL 5 EXAM REVISION

5. Convert the decimal value 47 into the equivalent 8-bit binary number. 1

6. State one problem associated with storing data in a flat file database. 1

8. When ordering pizza online, users select their choice from the following drop down menu:



- State one advantage of this type of user interface. 1

12. This pseudocode allows a user to enter the level they wish to start playing a game.

```
Line 1 RECEIVE level FROM (INTEGER) KEYBOARD
Line 2 WHILE level < 1 OR level > 10 DO
Line 3     SEND "error : please re-enter level" TO DISPLAY
Line 4     RECEIVE level FROM (INTEGER) KEYBOARD
Line 5 END WHILE
```

- Explain what happens if a user enters 12. 2

13. A programmer is developing a stock control program. If a user enters a stock code number from 1 to 900, it will display the number of items in stock.

Give one example of *exceptional test data* the programmer could use to test the program. 1
