

Pearson BTEC Level 3 Nationals Extended Certificate
Foundation Diploma, Diploma, Extended Diploma

Friday 18 January 2019

Afternoon

Paper Reference **31768H**

Computing

Unit 1: Principles of Computer Science

Information Booklet

Instructions

- You will need the information in this booklet to answer some questions.
- Read the information carefully.
- You must **not** write your answers in this booklet.
- Only your answers given on the question paper booklet will be marked.
- Do not return this Information Booklet with the question paper.

Turn over ►

P51764A

©2019 Pearson Education Ltd.

1/1/1/1




Pearson

SECTION 1

The information in this section should be used to answer Question 1.

Figure 1 shows some sample data about Jonty's customers.

ID	Area Number	House Number	Road Name	First Name	Surname	Date of Birth	Telephone Number	Missing Payments
1	1	128	Liverpool Road	Betty	Hepworth	19/01/1986	(01704) 211 988	0
2	2	89	Ashley Street	Chloe	Birks	01/06/1975	(01704) 221 155	2
3	5	72	Duke Street	Kian	Miller	25/03/1961	(01704) 236 664	1
4	6	14	Brade Street	Charlie	Brown	09/10/1989	(0151) 278 884	1
5	1	16	Lexton Drive	Emma	Smith	11/04/1990	(01704) 222 123	2
6	1	17a	Preston Road	Chris	Johnson	19/12/1979	(01704) 266 655	0
7	7	137	Lord Street	Lucy	Malone	19/08/1981	(0151) 211 113	1

Figure 1

Jonty allocates an Area Number to each customer. Houses in the same area are cleaned on the same day.

This shows how many payments are missing for each customer.

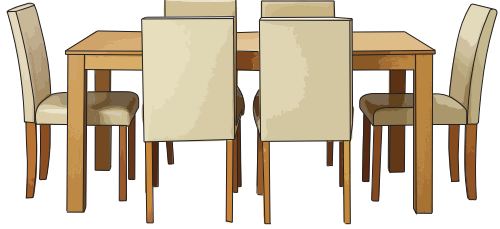
BLANK PAGE

Section 2

The information in this section should be used to answer Question 3.

Figure 2a shows the design of the screen that will be used to enter the details of the tables booked by customers in Theo's restaurant.

Find a table



Ticks and crosses are used to confirm successful data entry. **Other methods** can also be used to confirm this.

Surname ✓

Arrival Time ✓

Arrival Date ✗

Seating Preference ✓

Find Table

The first letter should be capitalised. The following letters should be in lower case.

The time should be expressed as **HH : MM**

The date should be expressed as **DD / MM / YY**

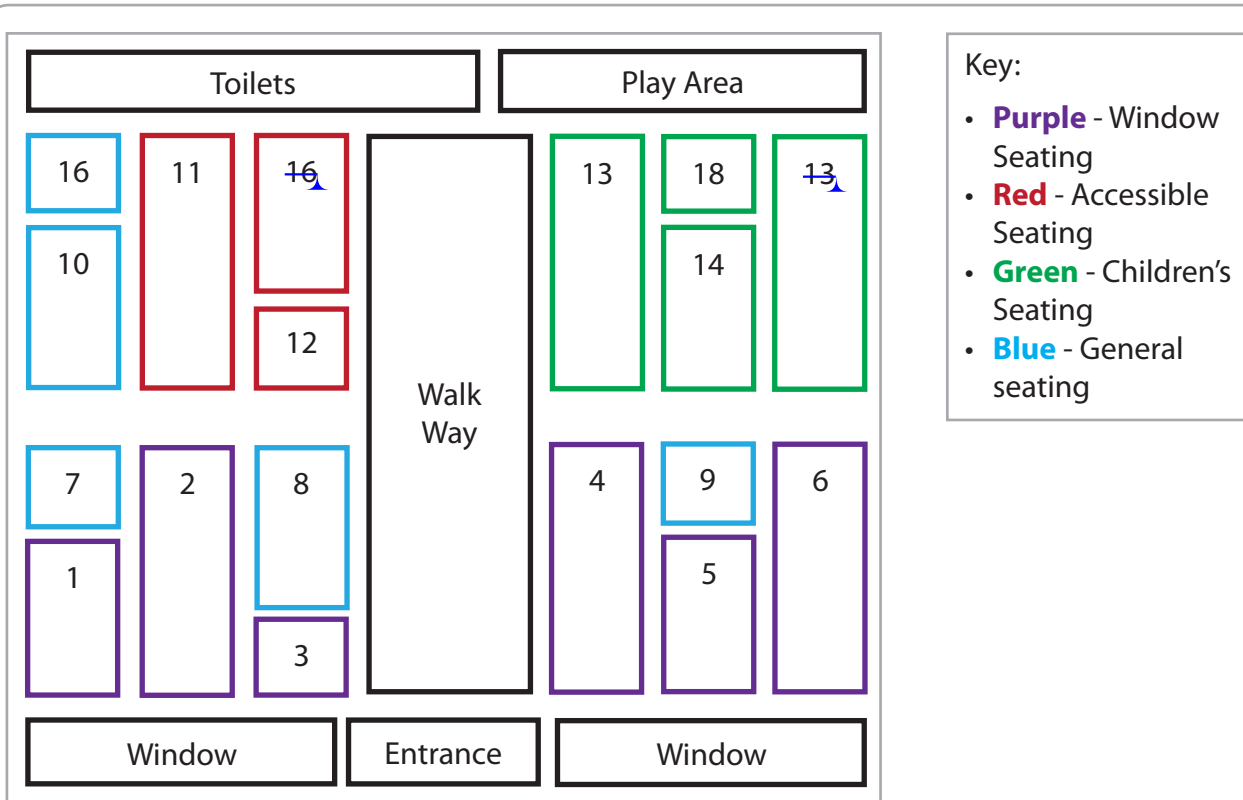
This can be in the:

- Window Seating
- Accessible Seating
- Children's Seating
- General Seating – This will be automatically selected if no option is selected.

When pressed this button will run validation rules and search for a table.

Figure 2a

Figure 2b shows the plan of the restaurant and rules that are followed to find a table.



1. A check will be made to make sure all booking information is entered:

- Surname
- Arrival Time
- Arrival Date
- Seating Preference

2. When the booking information is entered these rules are used to find a suitable table:

- **Rule 1** – Table in the seating area requested must be available at the time of arrival for 90 minutes.
- **Rule 2** – When rule 1 is not met, the customer is asked to change their arrival time. A check is made to see if a table in the seating area requested is available at the new arrival time for 90 minutes.
- **Rule 3** – When rule 1 and rule 2 are not met a check is made to see if a table in any seating area is available for 90 minutes.

If no tables are found the customer is told that no tables are available.

Figure 2b

Section 3

The information in this section should be used to answer Question 4.

Figure 3a shows the first design for the main menu for Poppy's revision program.

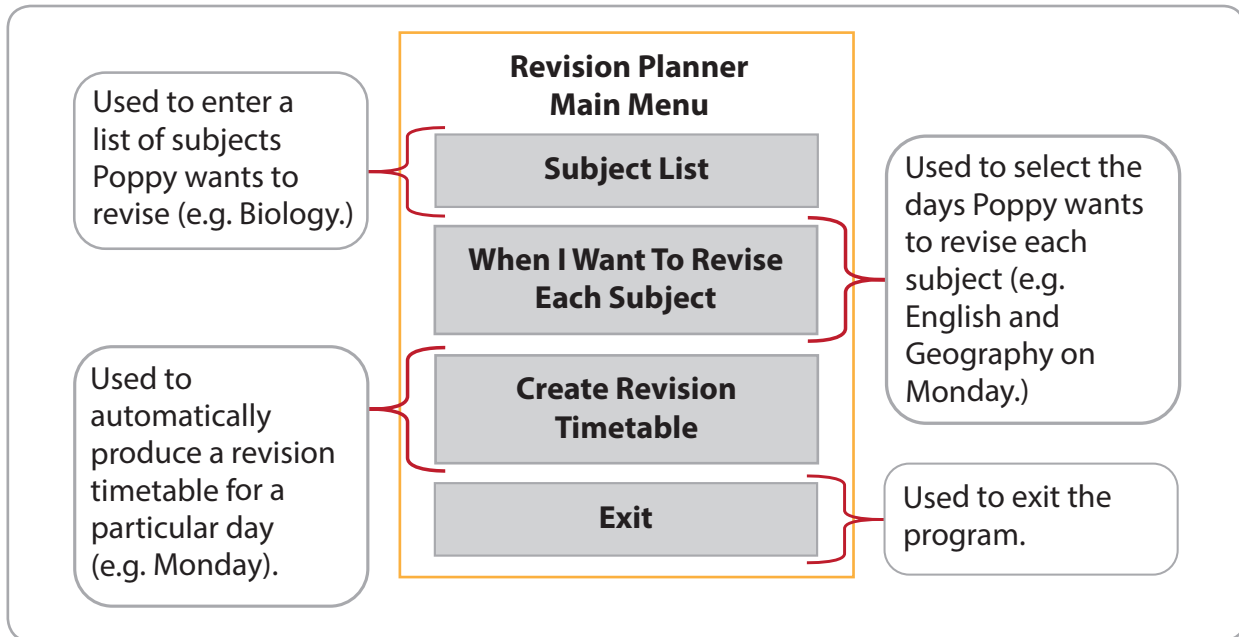


Figure 3a

BLANK PAGE

Figure 3b shows the rules that are followed when the 'Create Revision Timetable' button is pressed.

Algorithm Rules

1. The day is input (e.g. Monday).
2. The start time is input (e.g. 17:30).
3. The number of subjects to be revised that day is counted.
4. Each subject must be revised for 60 minutes. The revision time is calculated by multiplying the number of subjects by 60.
5. There should be a rest break every 45 minutes. The number of rest breaks is calculated by dividing the revision time by 45.
6. A rest break lasts for 20 minutes. The time required for rest breaks is calculated by multiplying the number of rest breaks by 20.
7. The total time is then calculated by adding the revision time to the rest break time.
8. The program should then print the:
 - number of subjects to be revised that day
 - revision start time
 - revision end time
 - number of breaks needed.

Figure 3b

Figure 3c shows an algorithm that will produce a revision timetable.

It is written in pseudocode.

```
01 BEGIN
02 //SECTION A – DAYS AND THE SUBJECTS THAT WILL BE REVISED
03 monday = [Biology, Computing, History]
04 tuesday = [Chemistry, Maths]
05 wednesday = [Geography, French, Physics]
06 thursday = [English, Maths]
07 friday = [Computing, History]
08 saturday = [Biology, Chemistry, Physics, Maths]
09 sunday = [Geography, French]
10
11 //SECTION B - VARIABLE DECLARATIONS
12 revisionDay = x
13 startTime = x
14 numberOfSubjects = 0
15 revisionTime = 0
16 numberOfBreaks = 0
17 breakTime = 0
18 totalTime = 0
19
20 //SECTION C - CALCULATING THE NUMBER OF SUBJECTS THAT NEEDS REVISING
21 INPUT revisionDay
22 INPUT startTime
23 FOR all items in revisionDay
24     numberOfSubjects = numberOfSubjects + 1
25 ENDFOR
26
27 //SECTION D - CALCULATING THE REVISION TIME
28 revisionTime = numberOfSubjects/60
29
30 //SECTION E - CALCULATING THE NUMBER OF REST BREAKS AND REST TIME
31 WHILE revisionTime > 45 THEN
32     numberOfBreaks = numberOfBreaks + 1
33 ENDWHILE
34 breakTime = numberOfBreaks * 20
35
36 //SECTION F - CALCULATING THE TOTAL TIME
37 totalTime = revisionTime + breakTime
38
39 //SECTION G – PRINTING INFORMATION TO THE USER
40 PRINT "The number of subjects that need revising is" + numberOfSubjects
41 PRINT "You will start revision at" + startTime
42 PRINT "You will stop revising at" + (startTime+totalTime)
43
44 END
```

Figure 3c



BLANK PAGE



BLANK PAGE



BLANK PAGE

