

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

Computing

Unit 1: Principles of Computer Science

Friday 19 January 2018 – Morning
Information Booklet

Paper Reference

31768H

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 will be marked.
- Do not return this Information Booklet with the question paper.

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SECTION 1

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

Figure 1 contains information about the current charges for gas and electric used by Oscar.

- He needs to pay for each unit of **gas** and each unit of **electric** that he uses
- There is one unit price for gas
- The unit price for electric depends on the time of day
- He pays standard daily charges for gas and electric
- He receives a discount each week

Charges

Gas

- Standard unit rate – £0.20
- Standard daily charge – £0.50

Electric

- Standard unit rate during the day – £0.35
- Standard unit rate during the night – £0.10
- Standard daily charge – £0.50

Discount

- £2 each week

Figure 1

SECTION 2

The information in this section should be used to answer Question 2.

Figure 2 shows the programming code that Alison has created using Visual Basic.

```
1 Public Class mainScreen
2     Dim newNumber As Integer
3     Dim previousNumbers(0 To 79) As Integer
4     Dim i, x, y As Integer
5 Private Sub GenerateNumbers_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles GenerateNumbers.Click
6     GeneratedNumbers.Text = ""
7     For x = 0 To 89
8 Start:
9         Randomize()
10        newNumber = Int((90 * Rnd()) + 1)
11        For y = 0 To 89
12            If newNumber = previousNumbers(y) Then
13                GoTo Start
14            End If
15        Next y
16        previousNumbers(x) = newNumber
17    Next x
18    For i = 0 To 89
19        GeneratedNumbers.Text = GeneratedNumbers.Text & (previousNumbers(i)) & " , "
20    Next
21 End Sub
22
23 End Class
```


Figure 2

SECTION 3

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

Figure 3a shows the design for the booking screen for the taxi company.

Booking Screen



First Name:

Surname:

House No:

Postcode:

Booking Time:

Booking ID:

Status:

These details are automatically calculated when the SUBMIT button is pressed

Figure 3a

Program requirements

When the 'SUBMIT' button is pressed the following actions must take place:

1. The time of the booking should automatically be stored.
2. A booking ID is generated by combining the customer surname and the booking time.
3. A status is set to:
 - 'Waiting' automatically
 - 'Priority' if the taxi has not arrived after 10 minutes
 - 'Urgent' if the taxi has not arrived after 20 minutes
 - 'Complete' when the taxi has arrived.

Figure 3b shows the variables that will be used to handle a customer booking.

Type	name	Purpose	Example Data	Data Type
Local	Variable_1	Used to store the customer's firstname.	'Sandra'	String
Local	Variable_2	Used to store the customer's surname.	'Parker'	String
Local	Variable_3	Used to store the customer's house number.	46	String
Local	Variable_4	Used to store the customer's postcode.	'PR2 5TY'	String
Local	Variable_5	Used to store the generated bookingID.	Parker0855	String
Local	Variable_6	Used to store the time that the booking was made.	08:55	String
Global	Variable_7	Used to store the current progress (Waiting, Priority, Urgent, and Complete).	'Waiting'	String

Figure 3b

SECTION 4

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

Figure 4 shows a selection of the songs that Paul has stored.

SongID	Song Name	Artist	Length	Rating	Last Selected (Days Ago)
1	Jagged borders	Rob Smith	3 mins, 24 secs	3 Star	20
2	Last Minute	Sharpiee	2 mins, 45 secs	3 Star	19
3	It's gonna be great	Flybe	4 mins, 18 secs	5 Star	5
4	Chaos	Trouble Dodgers	5 mins, 2 secs	5 Star	9
5	Dreamin'	Rob Smith	3 mins, 34 secs	3 Star	16
6	Rock this	Ian Green	3 mins, 52 secs	2 Star	25
7	Let's party	Flyby	2 mins, 58 secs	4 Star	13
8	Lovin' life	Andrew Ford	4 mins, 17 secs	5 Star	1
9	Smile	Crazy	4 mins, 9 secs	3 Star	17
10	Keep it real	Story Tellers	3 mins, 48 secs	4 Star	11
11	Time	Various	3 mins, 52 secs	5 Star	4
12	Let's celebrate	Harry Bunn	4 mins, 9 secs	5 Star	7

Figure 4

Playlist rules

1. The duration of the playlist to be generated is entered in minutes (e.g. 60 minutes).
2. 25% of the playlist duration is left empty so Paul can add songs that customers request during an event.
3. A playlist is then generated for the remaining duration using the following rules:
 - 45% of the playlist duration must be '5 Star' rated songs.
 - 30% of the playlist duration must be '4 Star' rated songs
 - 25% of the playlist duration must be '3 Star' rated songs.
4. The songs with the greatest 'Last Selected' value should always be selected first.
5. When a song is added to the playlist then the 'Last Selected' is set to 0.

NOTE: '1 Star' and '2 Star' songs are NOT added to a playlist. They are still stored in case a customer requests them during an event.

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