

# T level Digital Software Development

## Pre-course Booklet



Full name: \_\_\_\_\_

## Charity donation Task

Staff at **We-R-Nice Ltd** have decided to set up charity payments. A computer program is to be created which will allow the **input** of how many **hours** an employee works per week, and their **hourly rate**. The program outputs their **gross pay** and **charity donation**.

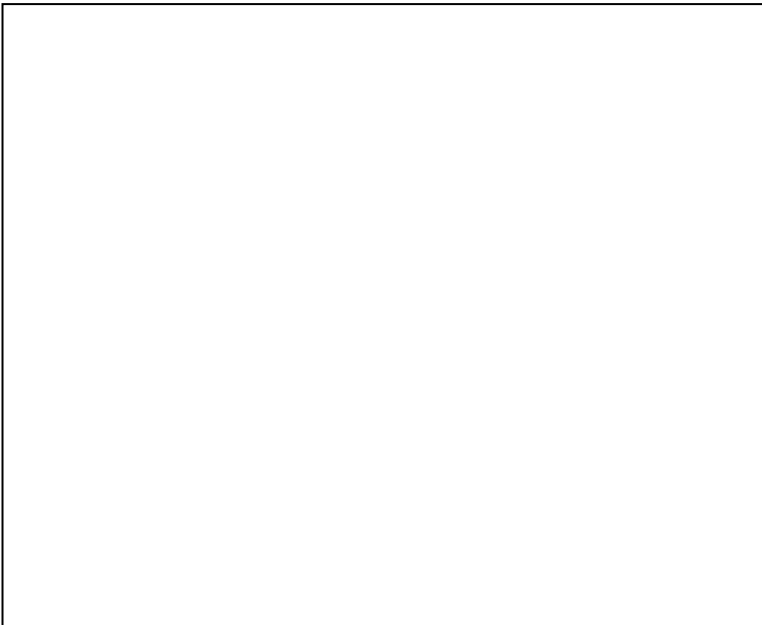
Gross pay is simply hours worked \* hourly rate.

Charity donation rules: if they earn over £100, they will have £1 deducted for charity for every £10 over £100. So if they earn £135, that is £35 above £100, so £3 is deducted.

The program should ask if you wish to carry out another calculation.

### Tasks

1. Create a user interface design for this program. It will need to allow inputs of hours and hourly rate, and output earnings and charity deductions.



2. Create a flowchart that will demonstrate the working out wages and charity deductions.

3. Write the algorithm in pseudocode.

'GET INPUTS

Input hourlyRate

Input hoursWorked

4. Create a list for the variables you will need.




Variable name	Comments
hourlyRate	How much is paid per hour to an employee

5. Create the program in a programming language of your choice then and copy and paste the code below. The code must be commented. You must also take a screenshot of your results of your program below too.

## Database quiz

Answer the following questions:

1. Define 'Record' [1]
2. Describe the difference between a flat file and relational database [2]
3. What is a DBMS? [2]
4. Give an example of transaction processing [1]
5. Describe referential integrity [2]
6. State the four ACID rules [4]
7. State what the acronym SQL stands for [1]

<b>Real-life examples of databases:</b> How might the following use a database?	
Mobile Phone: 	
Shop: 	
Library: 	

## Normalisation Exercises

1. You are required to fully normalise the data for a student database for a college. The principal of the college has identified the fields they want storing and has given you the following list.

Student number	Course number
Surname	Date of Birth
Forename	Course Title
Address	Course Cost
Telephone No	Date enrolled
Lecturer name	Lecturer number

The principal has also give you the following information which you will need:

- Each student is given a unique student number when they join the college

- A student can take more than one course
- The same course (having the same course number) can be taught by one or more lecturers.

2. A car hire company has decided to store their data in a relational database. You have been given the following fields to normalise.

Vehicle reg no  
 Make  
 Model  
 Year of registration  
 Customer number  
 Surname  
 Initial  
 Address  
 Date--hired  
 Date--returned

You also need to know that one customer can hire many cars at the same time so you will need to bear this in mind when you go through the normalisation process.

3. A new hospital needs a relational database. You have found out the following information about the hospital.

- Each ward will have its own name and unique reference number. The number of beds in each ward also needs to be recorded.
- Each ward will have a number of nurses who are given unique staff numbers which are recorded along with their names.
- Each nurse works in only one ward.
- Each patient is given a patient number and when admitted to a ward are assigned to one consultant who is responsible for their care.

PATIENT

Ward\_number  
 Ward\_name  
 Number of beds  
 Nurse\_name  
 Nurse\_staff\_number  
 Patient\_number  
 Patient\_name  
 Patient\_address  
 Patient\_Tel\_No  
 Patient\_DOB  
 Consultant\_Number  
 Consultant\_Name  
 Consutant\_Specialsim

## Social Media Sites

### Task 1 - Investigate some Social Media Sites

The table below contains a list of some of the most important social media sites. Complete the details. If you are not familiar with the site you may need to do some research into the features it has. In the 'Likely audience profile' column try to identify the type of people who might use the site and what they might use it for.

Site	Site main features	Likely audience profile
Facebook		
Twitter		
Google		
Instagram		
YouTube		
LinkedIn		
Snapchat		
WhatsApp		

**Task 2 - Write a short report comparing how two different companies use Social Media.**

Watch the video below to help you see how companies use Social Media

<https://www.youtube.com/watch?v=6Fz3yoaZu68>

**Then:-**

You might like to think about a company providing takeaway food like McDonalds v a small local shop selling takeaway food.

Points to help you:-

- Think about how they target their audience
- What language do they use ?
- What types of social media do they use
- Do they use different Social Media to target different types of audiences

