GCSE

C500U20-1B

COMPUTER SCIENCE – Component 2
Computer Programming

PRE-RELEASED MATERIAL

INSTRUCTIONS TO CANDIDATES

You must **not** take this material or any associated research material into the examination with you.

INFORMATION FOR CANDIDATES

The information overleaf is provided to assist your preparation for the Computer Programming examination.

All programs should be developed using a functional copy of Python (any version from 3.8 to 3.10.5)

Original Requirements

Parkwood Vale DigiTech Ltd. is a small start-up business that sells new and refurbished computer hardware from its high street shop. It also offers a hardware repair service.

Parkwood Vale DigiTech Ltd. would like to begin storing details of their stock and customer repair jobs on a computerised system. Whilst the business could buy an off-the-shelf package, it has decided to commission you and your team to work together to develop a bespoke solution.

Authentication

Data security is very important to the business. It has insisted that the system has a login screen that requires a username and a password for authentication before accessing the main menu. The system must display a message stating whether login was successful or unsuccessful. There will need to be a way to add additional users and passwords.

Main Menu and Navigation

Whilst the manager and IT technicians who work at Parkwood Vale DigiTech Ltd. are highly skilled, some of the staff are non-specialist computer users and they have requested that the new system be user-friendly; therefore, a Graphical User Interface (GUI) will be used.

Computer Repair Jobs

Parkwood Vale DigiTech Ltd. accepts hardware repair work. Each item that is brought into the shop for repair is considered a "job". The details of each repair "job" need to be stored on the computer.

Add Jobs

Parkwood Vale DigiTech Ltd. has decided that it would like to store the following details for each repair job:

- Job ID
- Item name
- Manufacturer name
- Description
- Customer ID

The form should also include buttons that:

- save the details to a file on disk called JobDetails.txt
- return to the main menu.

Parkwood Vale DigiTech Ltd. has provided a partial design of the user interface they would like to use:

Add Job

Job ID	
Item name	
Manufacturer name	
Description	
Customer ID	

Back   Save

Payroll

Parkwood Vale DigiTech Ltd. has to pay its staff for the hours they've worked and would like to calculate the correct amount of pay for each staff member.

Users will enter the monthly salary (Gross Pay) and the system will calculate and display deductions (Tax, National Insurance and Pension Contribution), and the correct amount of take-home pay (Net Pay).

The following calculations should be used for the prototype software:

- Tax = 20% (0.2) of Gross Pay
- National Insurance = 14% (0.14) of Gross Pay
- Pension Contribution = 8% (0.08) of Gross Pay
- Deductions = Tax + National Insurance + Pension Contribution
- Net Pay = Gross Pay − Deductions

They have decided that currently there is no need to store the results of these calculations.

A partial design for the user interface has been provided:

Payroll

Gross Pay [   ]

(Calculate)

Tax [   ]

National Insurance [   ]

Pension Contribution [   ]

Deductions [   ]

Net Pay [   ]

(Back)

Parkwood Vale DigiTech Ltd. would like the system developed using the Python programming language to enable them to make additions and changes to the program at a later date.