GCSE

COMPUTER SCIENCE

COMPONENT 2

Computer Programming

SAMPLE ASSESSMENT MATERIALS

PRE-RELEASED MATERIAL

TO BE MADE AVAILABLE TO CANDIDATES FROM 01 September 20xx

INSTRUCTIONS FOR 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 Python version 3.8.0

Original Requirements

Parkwood Vale is a small primary school that serves the local community.

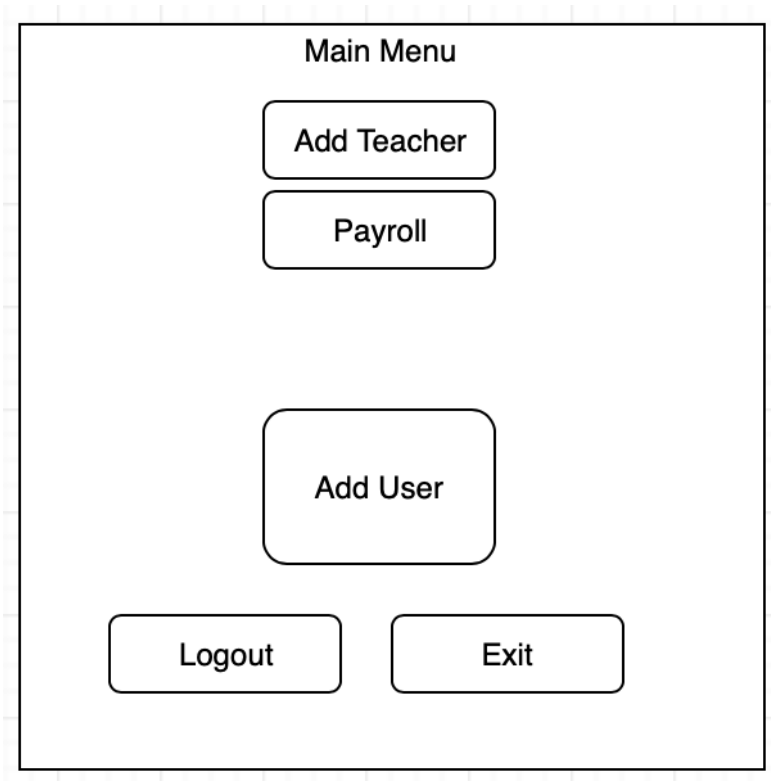
Parkwood Vale would like to begin storing data on a computerised system. Whilst the school could buy an off-the-shelf package, it has decided to commission you and your team to work together to develop a bespoke solution.

Authentication

Data security is critical to the school and so 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

Some of the school's staff are non-specialist computer users and they have requested that the system is user friendly; therefore, a Graphical User Interface (GUI) will be used. A partial design for the interface has been provided here:



Add Teacher

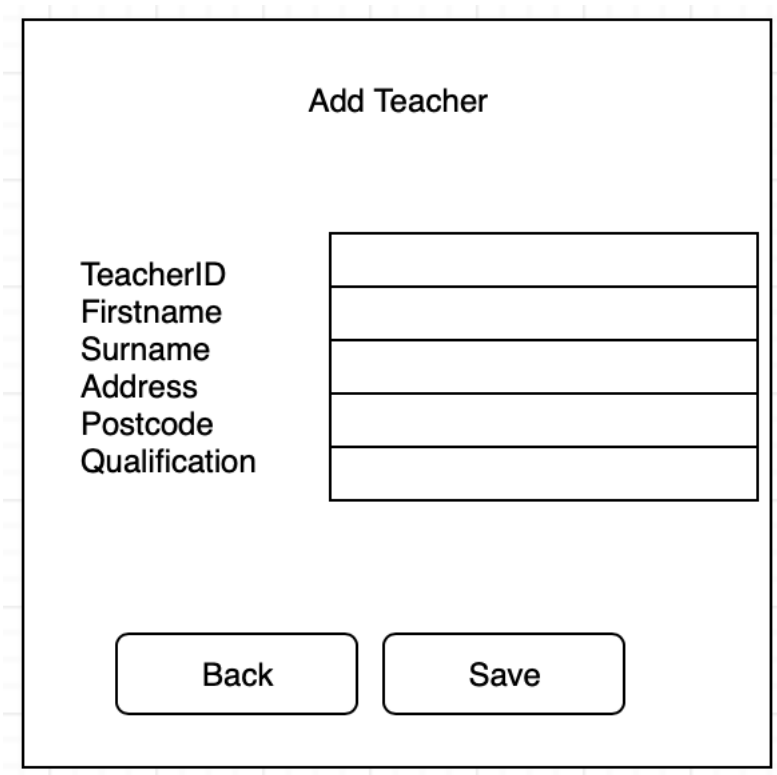
The school has decided that it would like to store the following staff details:

- TeacherID
- Firstname
- Surname
- Address
- Postcode
- Qualification (such as BSc (Hons) Physics).

The form should also include buttons that:

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

The school has provided a partial design of the user interface they would like to use:



Payroll

Parkwood Vale would like to calculate the correct amount of pay for individual teachers.

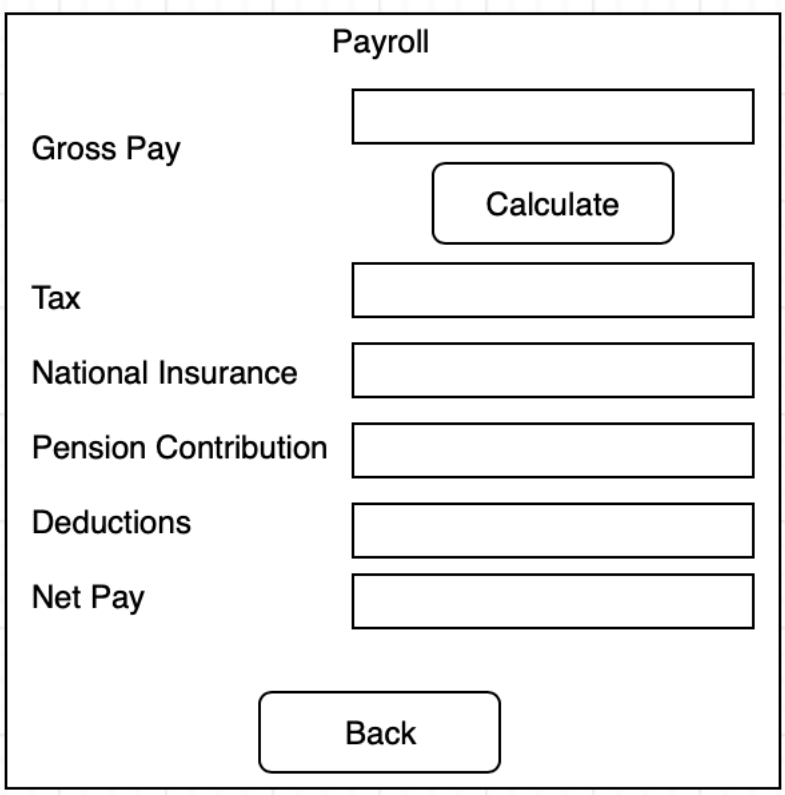
Users will enter the monthly salary (Gross Pay) and the system will calculate and display deductions (Tax, National Insurance and Pension Contribution), and the correct amount of take-home pay (Net Pay).

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:



Parkwood Vale 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.