

## GUIs

In the lecture we covered some of the Swing GUI features of Java. The GUI topics in Java take some time to master but there will be more on this next week.

### DURING THE LAB

Download the examples for this week GUI.zip, and extract into a suitable folder on your local drive (C:, USB, G:, not network path). The easiest way to do this is to right-click on the zip file and select **WinZip | Extract to here** or alternatively **7-Zip | Extract here**.

### Exercises

1. Write a small java application, Doctor.java, which changes the title in your content pane when you press a button to say you are well. It should read “In the pink”



2. Write a small java application, DoctorText.java, which puts the output “In the pink” into a text field when you press a button to say you are well. Try and make the text field turn pink too!



3. Write a small java application, DoctorSelection.java, which puts the output into a text field when you press either a button to say you are well or one to say you are unwell. It should read “In the pink” for Well and something else for Unwell (you will need an if statement).



4. By adapting DoctorSelection.java, write a small java application, DoctorOption.java, which uses radio buttons to choose Well or Unwell and a button to output a message to the text field.



5. Georgi Osbornsky, the Ruritanian Chancellor of the Exchequer, has decreed new rates of income tax (the Ruritanian unit of currency is the *doshky*):

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- a. Personal allowance is 3000 doshky if married, 2000 doshky if single
- b. Child allowance is 500 doshky per child
- c. Taxable income is gross income minus allowances
- d. Tax is calculated from taxable income as follows: Up to 20,000 doshky the rate is 20%. The marginal rate between 20,000 and 40,000 doshky is 40%. Above 40,000 doshky the marginal rate is a swingeing 60%

For instance:

a single person with no children with gross income 20,000 doshky has a taxable income of  $20,000 - 2,000 = 18,000$  doshky and pays 20% of 18,000 i.e. **3,600** doshky in tax

a married person with two children with gross income 30,000 doshky has a taxable income of  $30,000 - 3,000 - 2*500 = 26,000$  doshky so pays 20% of the first 20,000 + 40% of the remaining 6,000 =  $4,000 + 2,400 = \mathbf{6,400}$  doshky in tax

a married person with four children with gross income 60,000 doshky has a taxable income of  $60,000 - 3,000 - 4*500 = 55,000$  doshky so pays 20% of the first 20,000 + 40% of the next 20,00 + 60% of the remaining 15,000 =  $4,000 + 8,000 + 9,000 =$  a whopping **21,000** doshky in tax

Design a JFrame application that allows the user to input their gross income, marital status and number of children, and which calculates and displays the user's taxable income and tax due.