**Lab 1 Revision**

**Part 1**

**Repetition – for, while, do..while**

1. Write a *for* loop to print all integers between 40 and 60 in ascending order.
   1. Now write it with a *while* loop.
   2. Now write it with a *do.. while* loop.

Explain to the person beside you how these constructs differ.

1. Modify the for loop from Q1 to print all integers between 40 and 60 excluding 46 and 48 in ascending.
2. Write a *for* loop to print all integers between 60 and 40 in descending order.
3. Write a program to read in 5 integer values, and determine how many of the numbers entered are odd numbers
4. Write a program to read in 5 integer values and output their average, the smallest number entered and the largest number entered.

Q6

An internet cafe charges a €2.00 minimum fee to use the internet for up to three hours. The cafe charges an additional €0.50 per hour for each additional hour or part thereof. The maximum charge for any given session is €10.00. .

Write a program that calculates and displays the charges for each customer who uses the cafe. Your program will accept the hours used by each customer. The program will display the charge for each customer and a running total for all usage. The program will have at least one method that calculates the charge for each customer.

**Sample Dialoge:**

*Enter number of hours (-999 to quit) : 2*

*Customer Charge : 2.00 Total Receipt 2.00*

*Enter number of hours (-999 to quit) : 3*

*Customer Charge : 2.00 Total Receipt 4.00*

*Enter number of hours (-999 to quit) : 4*

*Customer Charge : 2.50 Total Receipt 6.50*

*Enter number of hours (-999 to quit) : 5*

*Customer Charge : 3.00 Total Receipt 9.50*

*Enter number of hours (-999 to quit) : 10*

*Customer Charge : 5.50 Total Receipt 15.00*

*Enter number of hours (-999 to quit) : 20*

*Customer Charge : 10.00 Total Receipt 25.00*

*Enter number of hours (-999 to quit) : 21*

*Customer Charge : 10.00 Total Receipt 35.00*

*Enter number of hours (-999 to quit) : -999*

**Part 2**

**Selection : if .. else statements, switch**

**Q1**

A year with 366 days is called a leap year.

For any year before 1582, a year is a leap year if it is divisible by four.

For years after 1582 it is a leap year if it is a century year (divisible by 100) and divisible by 400, if not a century year it is a leap year if it is divisible by 4.

Write a program that asks the user for a year and computes whether that year is a leap year.

Q2

Write a program to print the pattern. Printing one ‘#’ at a time

#

# #

# # #

# # # #

# # # # #

Do it now upside down

Q3

An on line book retailer charges a flat 2.50 for each delivery, on top of which it applies the following the progressive fee rate depending on delivery weight. The progressive fee rate is applicable to the book total weight.

|  |  |  |
| --- | --- | --- |
| **Type of delivery** | **For weight of Books** | **Fee Rate (Euro/gram)** |
| Regular | 0 - 2000 grams | 0.025 |
| Regular | 2001 – 5000 grams | 0. 03 |
| Regular | 5001 and over | 0.05 |
| Express | Use the same rate as Regular delivery plus 1.50 euro extra fee | |
| Super Express | Use the same rate as Regular delivery plus 2.50 | |
| Super Super Express | Use the same rate as Regular delivery plus 3.50 | |

**Example:**

If the total weight of books is 3500 grams, we can calculate the fee as follows.

Fee = 2.5 + ( 2000 grams \* 0.0250) + ( 3500 – 2000 grams) \* 0.03

= 97.50 Euro  
Write a program to compute the total fee for delivery of books, the user shall be able to calculate the fee as many times as they wish.. The input will be the total weight of books in grams and the Delivery type (R for Regular Delivery and X for Express Delivery, SX, SSX)

Example Program Dialogue:

Enter Weight of book (grams) :3500

Enter Delivery (x/r/sx/ssx) : r

You have to pay 97.5 0 euro for 3500 grams

Calculate another (y / n) :

Q4

Write a program that computes taxes for the following schedule:

|  |  |  |  |
| --- | --- | --- | --- |
| If your status is single and if the taxable income is over | But not over | The tax is | Of the amount over |
| €0 | €8,000 | 10% | €0 |
| €8,000 | €32,000 | €800+15% | €8,000 |
| €32,000 |  | €4,400 + 25% | €32,000 |
| If your status is married and if the taxable income is over | But not over | The tax is | Of the amount over |
| €0 | €16,000 | 10% | €0 |
| €16,000 | €64,000 | €1,600+15% | €16,000 |
| €64,000 |  | €8,800 + 25% | €64,000 |