

INF 154 PRACTICAL 7 2023



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At the end this practical you should be able...

1. To work with for loops.
2. To work with nested for & while loops.
3. To use a timer.



What are we going to do?

- Prac 7a: Completed in class.
- Prac 7b: Completed in class.
- Prac 7c: Take home practical.



Practical Exercise 7a

Objective: We will be creating a timer. The timer can be stopped and the time can be collected and displayed.



Practical Exercise 7a

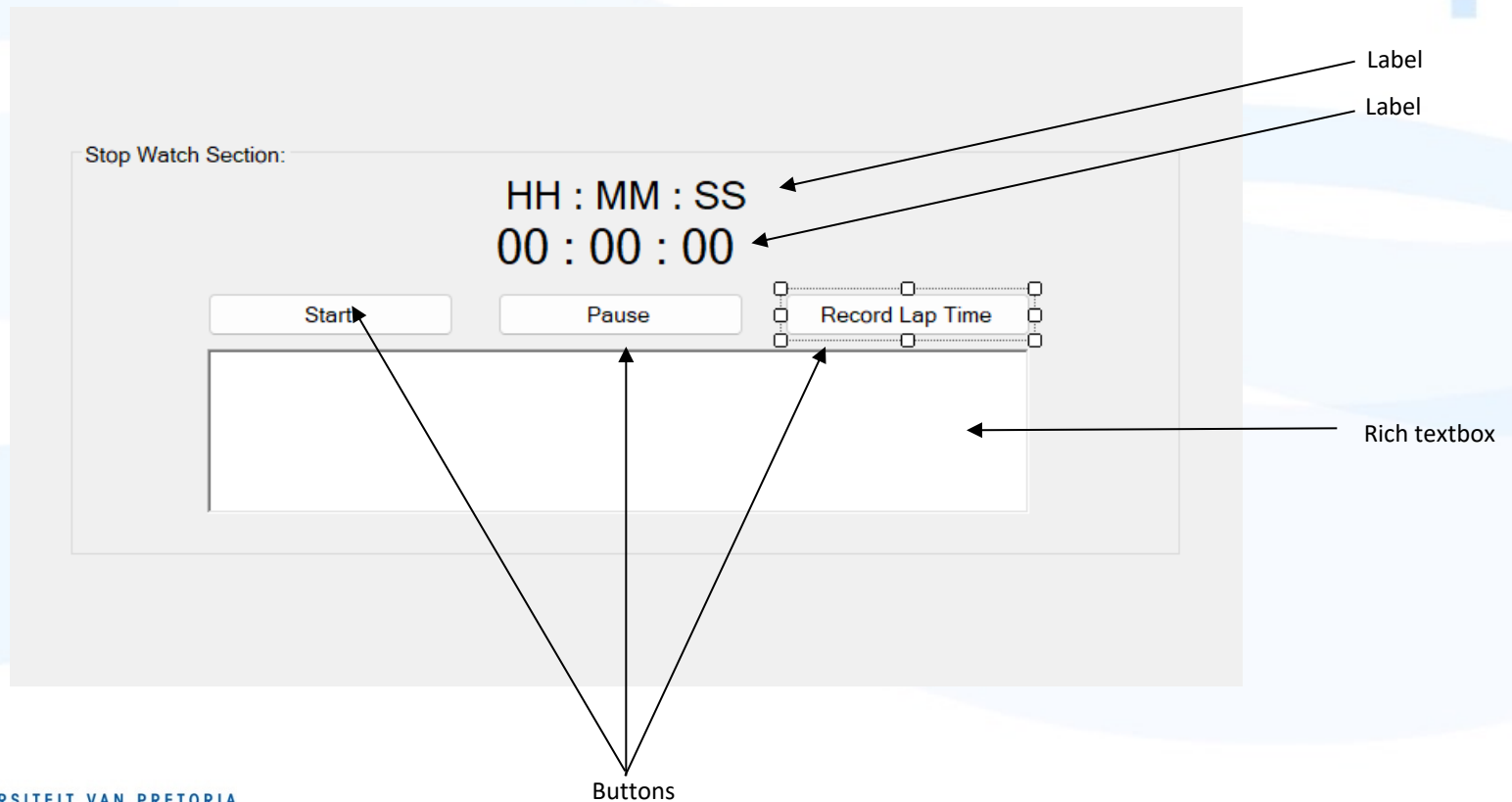
Remember to ask yourself questions:

- Inputs and Obtaining Data:
 - Is the user providing us with information, if so, how?
 - Once I have the interface to obtain the data, do I need to manipulate it?
- Processing:
 - How do I solve the problem?
 - » What formulas do I need?
 - » What steps are required?
- Outputs:
 - How are we displaying the information?
 - Do we have to manipulate the data again?

Practical Exercise 7a

The interface:

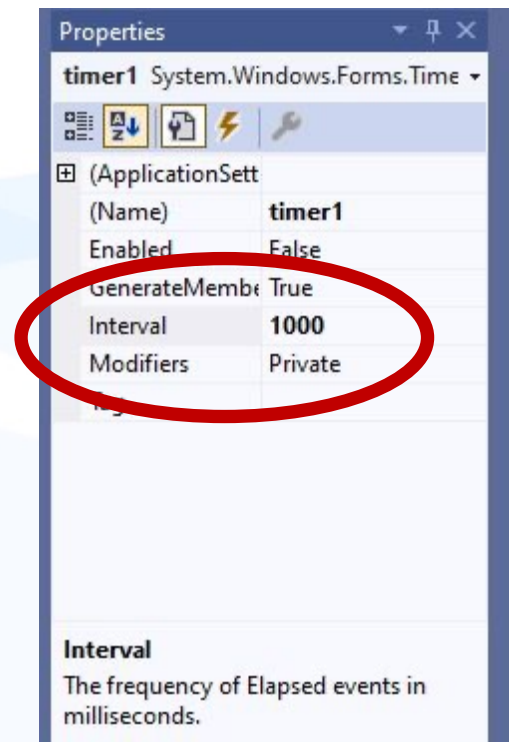
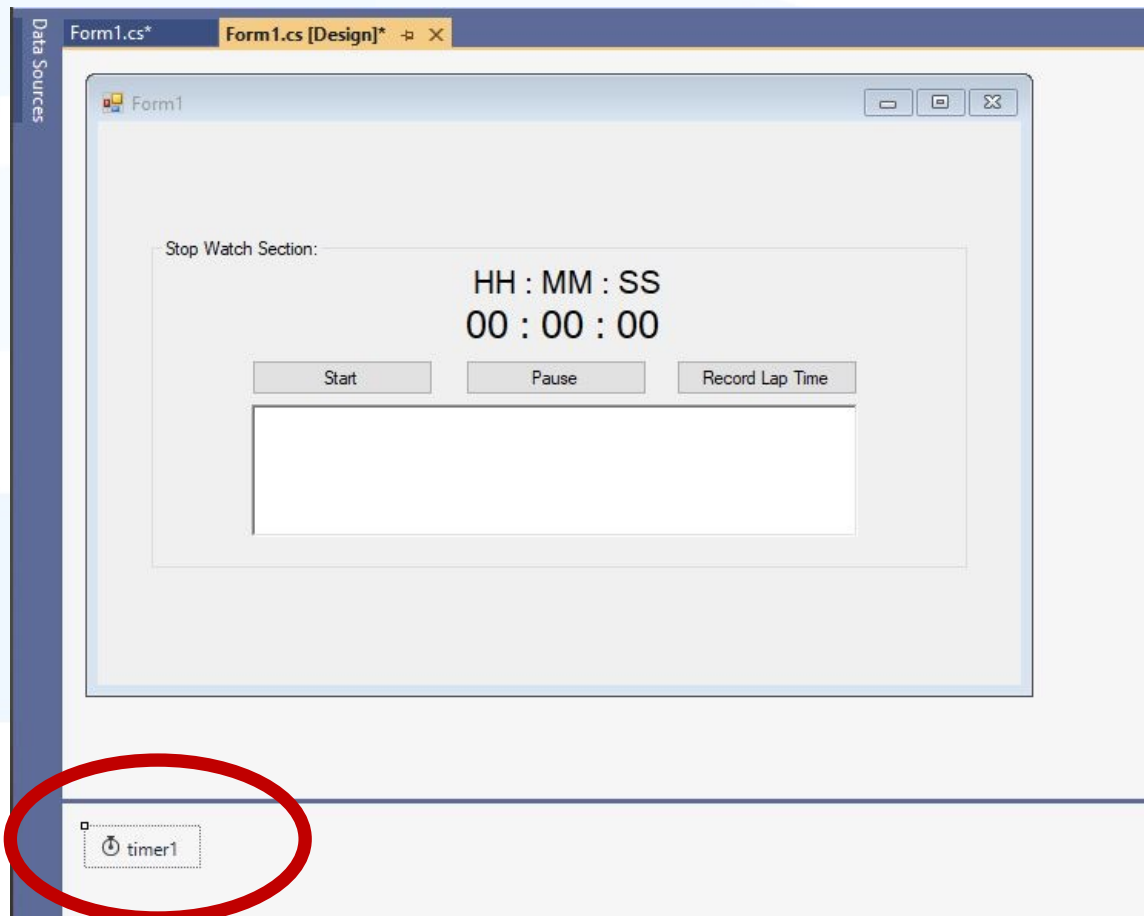
Now that we have an understanding of the program we would like to implement. We can design the interface.



Practical Exercise 7a

Note: Set the timer interval to 1000 in the property window

When you add the timer you should see this icon in the bottom left corner.



Practical Exercise 7a

The code:

```
public partial class Form1 : Form
{
    1 reference
    public Form1()
    {
        InitializeComponent();
    }
    //Variables
    int sec = 01, min = 00, hour;

    //Processes
    1 reference
    private void btnStart_Click(object sender, EventArgs e)
    {
        timer1.Enabled = true;
    }

    1 reference
    private void btnPause_Click(object sender, EventArgs e)
    {
        timer1.Enabled = false;
    }

    1 reference
    private void btnRecord_Click(object sender, EventArgs e)
    {
        //Output
        rtxLapDisplay.AppendText(hour + ":" + min + ":" + sec + " was the lap recorded time." + "\n");
    }
}
```



Practical Exercise 7a

The code:

[1 reference](#)

```
private void timer1_Tick(object sender, EventArgs e)
{
    //Output
    lblTimer.Text = Convert.ToString(hour + " : " + min + " : " + sec);
    sec++;
    if (sec == 60)
    {
        min = min + 1;
        sec = 1;
    }
    if (min == 60)
    {
        hour = hour + 1;
        min = 1;
    }
}
```



Practical Exercise 7b



Objective: We are going to create an application that prints 2 triangles. Two different methods will be used to print out the same triangles. The one method we will use a for loop and the other we will use a while loop.

Practical Exercise 7b

Remember to ask yourself questions:

- Inputs and Obtaining Data:
 - Is the user providing us with information, if so, how?
 - Once I have the interface to obtain the data, do I need to manipulate it?
- Processing:
 - How do I solve the problem?
 - » What formulas do I need?
 - » What steps are required?
- Outputs:
 - How are we displaying the information?
 - Do we have to manipulate the data again?

Practical Exercise 7b

The interface:

Now that we have an understanding of the program we would like to implement. We can design the interface.

Two radio buttons
in a group box.

Rich text boxes

Buttons

The screenshot shows a Windows form titled 'Form1' with a standard Windows XP-style title bar. The form is divided into several sections. At the top left, there is a group box titled 'Select Loop' containing two radio buttons: 'For Loop' and 'While Loop'. To the right of this is another group box titled 'Enter Size' containing a label 'Size:' and a numeric up-down control with the value '0'. Below these are two large, empty rectangular areas, which are rich text boxes. At the bottom of the form, there is a horizontal panel containing three buttons: 'Draw', 'Clear Box One', and 'Clear Box Two'. The 'Draw' button is positioned above the two rich text boxes, while 'Clear Box One' and 'Clear Box Two' are positioned below them. The form has a light gray background and a blue border.

A label and a numeric up down
in a group box.

Practical Exercise 7b

The code:

- Declaring variables, getting your inputs and deal with data manipulation:

```
1 reference
private void btnDraw_Click(object sender, EventArgs e)
{
    //Variables
    int size;
    //Inputs & data manipulation
    size = Convert.ToInt32(nudSize.Value);
}
```



Practical Exercise 7b

The code:

- Processes – for loop:

```
if (radFor.Checked == true)
{
    for (int i = size; i > 0; i--)
    {
        for (int j = 0; j < i; j++)
        {
            richTextBox1.Text += "#";
        }
        richTextBox1.Text += "\n";
    }
}
```



Practical Exercise 7b

The code:

- Processes – while loop:

```
else if (radWhile.Checked == true)
{
    while (size > 0)
    {
        int k = size;
        while (k > 0)
        {
            richTextBox2.Text += "#";
            k--;
        }
        richTextBox2.Text += "\n";
        size--;
    }
}
```



Practical Exercise 7b

The code:

- Processes –remaining:

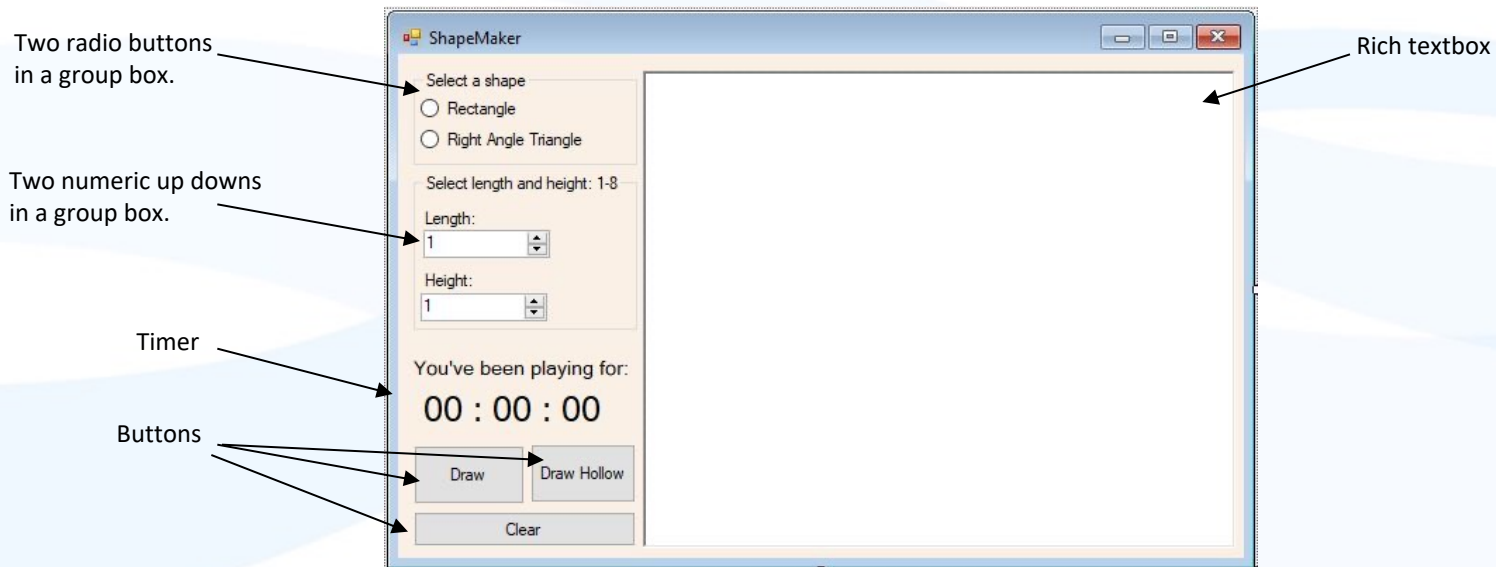
```
        else
        {
            MessageBox.Show("Select an option");
        }
    }
//More Processes
1reference
private void btnClearBoxOne_Click(object sender, EventArgs e)
{
    richTextBox1.Clear();
}
1reference
private void btnClearBox2_Click(object sender, EventArgs e)
{
    richTextBox2.Clear();
}
```



Practical Exercise 7c

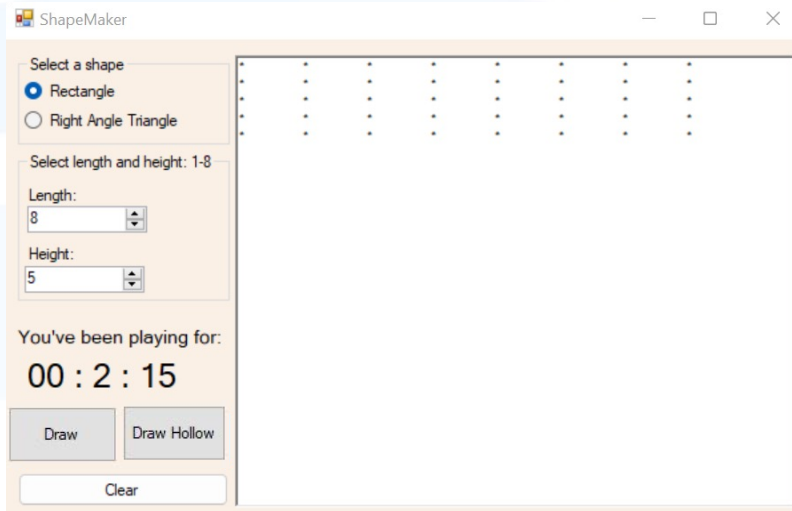
Practical assignment to try at home:

- You are required to build an application that will print out either a right angled triangle or a rectangle.
- Value range: 1-8.



Practical Exercise 7c

Practical assignment to try at home:



Practical 7 Submission

Submit your Practical 7c project on ClickUP as follows:

- **Due Date: 22 May 2023 08:30**
- **Use the assignment instructions document for more information and to access the rubric.**
- Name your project, **INF154Prac7xxxxxxxxx** (where xxxxxxxxxx is your student number) and compress (zip) your project.
- Submit it under the Practical 7 submission link.