

Programming Basics – live exercises

Control structures

Task 1: Simple `if` statement

Define a suitable variable in which the fill volume of a glass in millilitres (and thus an integer) can be stored temporarily. Then initialise the variable with the value 250.

Now formulate a code snippet which ensures that the text "The glass is full!" is output at a fill volume of 250 ml.

Task 2: Two-way `if` statement

Expand the source code of Task 1 so that the text "The glass is not full any more!" is output if the fill volume is less than 250 ml. You need to initialize fill volume differently to Task 1.

Task 3: `if` statement

Expand or rewrite the source code of Task 2 so that in addition to the text from Task 1 and 2, the text " The glass is half full!" is output if the fill volume is 125 ml.

Task 4: Converting numbers -> school grades

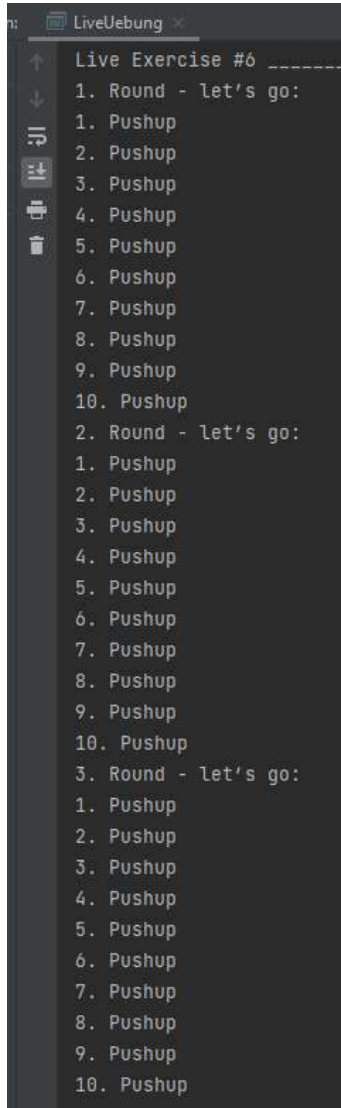
Write a programme that expects an integer as the programme parameter and then converts the number into a school grade. For a 1 the programme outputs "very good", for a 2 "good", and so on. For all numbers less than 1 and greater than 6, the output should be "Invalid value". Use the switch-case to solve this task.

Task 5: `while` loop

- a) Formulate a code snippet that outputs all numbers from 1 up to and including 50.
- b) Formulate a code snippet that does not output all numbers from 1 up to and including 50, but only the numbers that are divisible by 3.

Task 6: Nested `while` loop

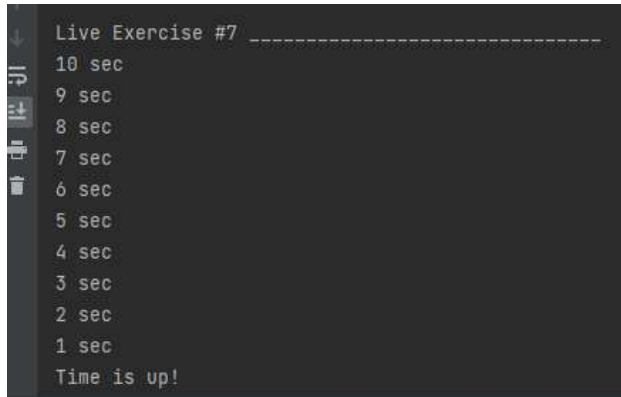
Formulate a code snippet that logs the following scenario: three rounds should be completed, and 10 push-ups should be done in each round. The programme to be created should output the information regarding the round number and number of push-ups as follows:



```
Live Exercise #6 -----
1. Round - let's go:
1. Pushup
2. Pushup
3. Pushup
4. Pushup
5. Pushup
6. Pushup
7. Pushup
8. Pushup
9. Pushup
10. Pushup
2. Round - let's go:
1. Pushup
2. Pushup
3. Pushup
4. Pushup
5. Pushup
6. Pushup
7. Pushup
8. Pushup
9. Pushup
10. Pushup
3. Round - let's go:
1. Pushup
2. Pushup
3. Pushup
4. Pushup
5. Pushup
6. Pushup
7. Pushup
8. Pushup
9. Pushup
10. Pushup
```

Task 7: for loop

Write a Java programme with a `CountDown` class, which counts down from 10 seconds and then displays the message "Time is up!" on the console.



```
Live Exercise #7 -----  
10 sec  
9 sec  
8 sec  
7 sec  
6 sec  
5 sec  
4 sec  
3 sec  
2 sec  
1 sec  
Time is up!
```