

## Answers to Questions from TT3.1

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1: Assume that age has the value 0. List the actions the computer executes when it runs the following code.

```
puts('Message 0')  
while (age < 5)  
    puts('Message 1')  
    age = age + 1  
end  
puts('Message 2')
```

| Sequence | Action  | Note               |
|----------|---|--------------------|
| 1        | Calls the puts() procedure with the text 'Message 0'  |                    |
| 2        | Evaluates the expression (condition of while) age < 5 | Condition is true. |
| 3        | Jumps into the while loop                             |                    |
| 4        | Calls the puts() procedure with the text 'Message 1'  |                    |
| 5        | Adds a value of plus one to the age variable          | Age now 1          |
| 6        | Returns to the top of the while loop                  |                    |
| 7        | Evaluates the expression (condition of while) age < 5 | Condition is true. |
| 8        | Calls the puts() procedure with the text 'Message 1'  |                    |
| 9        | Adds a value of plus one to the age variable          | Age now 2          |
| 10       | Returns to the top of the while loop                  |                    |
| 11       | Evaluates the expression (condition of while) age < 5 | Condition is true  |
| 12       | Calls the puts() procedure with the text 'Message 1'  |                    |
| 13       | Adds a value of plus one to the age variable          | Age now 3          |
| 14       | Returns to the top of the while loop                  |                    |
| 15       | Evaluates the expression (condition of while) age < 5 | Condition is True  |
| 16       | Calls the puts() procedure with the text 'Message 1'  |                    |
| 17       | Adds a value of plus one to the age variable          | Age now 4          |
| 18       | Returns to the top of the while loop                  |                    |
| 19       | Evaluates the expression (condition of while) age < 5 | Condition is true  |
| 18       | Calls the puts() procedure with the text 'Message 1'  |                    |
| 19       | Adds a value of plus one to the age variable          | Age now 5          |
| 20       | Returns to the top of the while loop                  |                    |
| 21       | Evaluates the expression (condition of while) age < 5 | Condition is false |
| 22       |   |                    |
| 23       |   |                    |
| 24       | Jumps to the end of the while loop                    |                    |
| 22       | Calls the puts() procedure with the text 'Message 2'  |                    |

2. Assume that age has the value 8. List the actions the computer executes when it runs the following code.

```
puts('Message 0')

while (age > 5)

    puts('Message 1')

    age = age - 2

end

puts('Message 2')
```

| Sequence  | Action  | Note                |
|-----------|---|---------------------|
| <b>1</b>  | Calls the WriteLn procedure with the text 'Message 0' |                     |
| <b>2</b>  | Evaluates the expression (condition of while) age > 5 | Condition is true.  |
| <b>3</b>  | Jumps into the while loop                             |                     |
| <b>4</b>  | Calls the puts() procedure with the text 'Message 1'  |                     |
| <b>5</b>  | Subtract 2 from age                                   | Age now 6           |
| <b>6</b>  | Returns to the top of the while loop                  |                     |
| <b>7</b>  | Evaluates the expression (condition of while) age > 5 | Condition is true.  |
| <b>8</b>  | Jumps into the while loop                             |                     |
| <b>9</b>  | Calls the puts() procedure with the text 'Message 1'  |                     |
| <b>10</b> | Subtract 2 from age                                   | Age now 4           |
| <b>11</b> | Evaluates the expression (condition of while) age > 5 | Condition is false. |
| <b>12</b> | Jumps to the end of the while loop                    |                     |
| <b>13</b> | Calls the WriteLn procedure with the text 'Message 2' |                     |

End of Task