



A-Master Project



Author Guidelines

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Background

"Study the future" is the motto of the state-run Beuth University of Applied Sciences Berlin. Located in the center of Berlin in the district of Wedding, it offers the largest range of engineering courses in Berlin and Brandenburg. With around 13,000 students, Beuth University of Applied Sciences is one of the largest universities of applied sciences in Germany.

Beuth University offers its students a wide range of courses in applied engineering, natural sciences and economics in over 70 accredited bachelor's and master's degree programs. The central institution Distance Learning Institute offers further study and educational opportunities.

Beuth University of Applied Sciences Berlin is conducting the project "Development of a Renewable Energies and Energy Efficiency Master Degree Program (RE/EE)" in cooperation with Kabul University in Afghanistan. The overall goal of the project is to increase the potential future workforce in RE/EE in Afghanistan.

The aim of the project is to further develop the academic education sector in Afghanistan and to increase the potential of future workforce in the field of RE/EE in order to meet the climate change objectives and employers' demand for graduates in technical and managerial positions.

The project's approach relies on a **blended learning format** established at Beuth University of Applied Sciences with customized modular learning materials and a training-of-trainers and multipliers approach to enable Kabul University to quickly adopt and sustainably deliver the new degree program.

The target group of the self-study material are Bachelor graduates in Afghanistan to be enrolled in the Master Degree Program Renewable Energies and Energy Efficiency.

Basic Information

One page must contain between **1,800 and 2,000 characters** (including spaces). Pages containing fewer characters will be combined and counted as one page.

Each module must be divided into **6 - 9 Learning Units** ("LU", equivalent to chapters). Each LU may contain further subdivisions (subchapters), but no further than the **third level**.

Each module must include **one to four case studies** (detailed case description) which are at least 2-3 pages each (also be counted as pages). Each Case Study must have a practical and regional (Afghanistan) relevance.

Learning Units will be made available in two formats:

- **Digital:** Optimized for different screen sizes and offline or online work
- **Analogue:** Optimized to be viewed as a printout or as a pdf on a digital device

The **offline digital version** is assumed to be the default and can consist of any of the didactical elements outlined in the following sections. A pen-and-paper format will be created based on the digital version as a fallback option.

Copyright and use of third-party content

The authors are obliged to observe copyright law. Quotations or excerpts from other sources must be marked as such and may not exceed a small extent. In the case of quotations or the use of pictures, graphics, illustrations and other didactic elements of third parties, the authors must ensure that these may be used (also **commercially**). For all texts (in a footnote), images, graphics, etc. (in the **image description**) should be given exact references. This is to ensure that Beuth University of Applied Sciences can use all materials in any form without restriction and without violating the rights of third parties.

If at all possible use images, graphics and other assets you created yourself.

When using resources from third parties please follow the below example in stated the needed information on **1. Author 2. Source 3. License**

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Figure 1. Please use the caption functionality of word. It will also provide auto numbering. Provide copyright information for every image you use. Photo by Antonio Garcia from https://unsplash.com/photos/ndz_u1_tFZo (Unsplash License). Please provide images separately as a .jpg or .png. Images should be at least 1024px wide at 72 ppi.

- Picture caption with auto numbering in blue (this will appear in the unit itself)
- Author of the picture in red (please also provide this information if it is a picture by yourself because we cannot know if you just forgot to note down the original author or if it is a picture which you created yourself)
- Image source with link in pink
- License name and link to the license in green (make sure that the license allows for **commercial use!**)

Learning Unit structure

For example, for a LU in project management, the structure could look like this:

PM 1.1 Introduction to project management

1. Introduction

Learning Outcomes

2. Input

Introduction to project management

Types of projects

Project planning

...

3. Summary

4. Self-Test Questions

Introduction

At the beginning of each Learning Unit there is always a description of the intended **Learning Outcomes**. All in all this introduction should be roughly $\frac{1}{2}$ **page**.

Input

The content of the learning unit should be mostly text. In addition, it is mandatory to include **further didactic elements at least every second or third page** as a supplement to the continuous text. Didactic elements include illustrations, photos, tables, sketches, graphs, drawings, etc. The didactic elements must enhance the quality of the text. Videos or presentations that can be streamed or downloaded from the Internet and that illustrate or supplement facts are also welcome but should not be central to the LU.

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quotations or the use of pictures, graphics, illustrations and other didactic elements of third parties, the authors must ensure that these may be used (also commercially). For all texts (in a footnote), images, graphics, etc. (in the image description) should be given exact references. This is to ensure that Beuth University of Applied Sciences can use all materials in any form without restriction and without violating the rights of third parties.

Please provide images separately as a .jpg or .png. Images should be at least 1024px wide at 72 ppi (see: https://cft.vanderbilt.edu/wp-content/uploads/sites/59/Image_resolutions.pdf).

When adding tables make sure to add them as an editable table not a picture or screenshot.

Summary

At the end of each learning unit there is a summary that recaps what has been learned. The ultimate aim of any course is to achieve the assigned learning objectives. So it is very good practice to align the summary in accordance to learning objectives. It helps and aids learners to revise exactly what is expected from them, after the completion of the course.

Self-Test Questions

Each Learning Unit includes a set of 3 to 4 questions for the learner's self-examination (**question set**). Different question types must be used and the correct and incorrect answers must be given. A set of 3-4 questions with answers that also give feedback to deepen the student's knowledge are counted as **one page**. Please refer to the next section for an introduction to the possible question types and how to implement them.

Self-Test Questions

In this text you will be introduced to the different question types which can be used for the self-test question set at the end of each learning unit. Please make sure to provide your adaptations in the below presented form to make sure that they can be transformed to both the digital as well as the analogue learning unit version. The digital version of the example tasks can be accessed following this link:

<https://d.pr/ZXqZvk>

The fallback paper-pencil version of the example questions can be downloaded as a pdf from the following link: <https://d.pr/f/ChU7s9>

When creating your own learning unit you can use the “Unit Template” provided to you. There you will find template for each question type which you can use and adapt to your need.

Quizzes

Different quiz types: Specifically, Single-Choice, Multiple-Choice or True-False questions.

True-False Questions

Examples

Question	Answer
HTML is a markup language	Yes
<i>Feedback: HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript).</i>	

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Markup is a script language	No
<i>Feedback: In computer text processing, a markup language is a system for annotating a document in a way that is syntactically distinguishable from the text, meaning when the document is processed for display, the markup language is not shown, and is only used to format the text.</i>	

Notes

Please provide the questions and answers in table form. Questions must either be true or false. Please provide feedback to your questions to broaden the student's knowledge as shown above.

Single Choice Set

Examples

What's a hyperlink?

A reference to data that the user can follow

A very fast connection between two objects

What number is PI?

3.14

9.82

5.12

Percentage Correct	Feedback
<25%	Not there yet. Please study chapter XYZ of this learning unit in more detail to understand the basics of this topic.

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25% - 74%	You have a first grasp of the topic but there is still a lot missing. Consider revisiting chapter XYZ of this learning unit to deepen your knowledge.
75% - 99%	Good job, nearly there! There are still a few missing links but you are on a good path.
100%	Perfect score! Congratulations!

Notes

Please provide the questions in bold. Create blocks of question and answers, where each block is separated by an empty line. In each block the first line is the question, the other lines contain the answers. The first answer is the correct one. Please provide feedback for the whole block of questions as shown in the table above.

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Multiple Choice

Examples

Please tick all items which represent markup languages.	
HTML	<input checked="" type="checkbox"/>
<i>Feedback: HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript).</i>	
Markdown	<input checked="" type="checkbox"/>
<i>Feedback: Markdown is a lightweight markup language for creating formatted text using a plain-text editor. John Gruber and Aaron Swartz created Markdown in 2004 as a markup language that is appealing to human readers in its source code form.</i>	
JavaScript	<input type="checkbox"/>
<i>Feedback: JavaScript often abbreviated as JS, is a programming language that conforms to the ECMAScript specification and is a script language. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications.</i>	
CSS	<input type="checkbox"/>
<i>Feedback: Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.</i>	

Please tick all items which represent units to measure internet speed.	
Mbps	<input checked="" type="checkbox"/>
<i>Feedback: megabit per second (symbol Mbit/s or Mb/s, often abbreviated "Mbps") is a unit of data transfer rate equal to 125 kilobytes per second.</i>	
kB	<input type="checkbox"/>
<i>Feedback: The kilobyte is a multiple of the unit byte for digital information. The International System of Units (SI) defines the prefix kilo as 1000; per this definition, one kilobyte is 1000 bytes.</i>	

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MB	<input type="checkbox"/>
<i>Feedback: The megabyte is a multiple of the unit byte for digital information. Its recommended unit symbol is MB. The unit prefix mega is a multiplier of 1000000 in the International System of Units (SI). Therefore, one megabyte is one million bytes of information.</i>	
GB	<input type="checkbox"/>
<i>Feedback: The gigabyte is a multiple of the unit byte for digital information. The prefix giga- means 10^9 in the International System of Units (SI). Therefore, one gigabyte is one billion bytes. The unit symbol for the gigabyte is GB.</i>	

Notes

Please provide the questions as shown in the table above. It is possible to have only one correct answer in a multiple-choice question. Please provide feedback to your questions to broaden the student's knowledge as shown above.

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Fill in the Blanks

A question type in which students have to fill blanks in a sentence or paragraph.

Examples

Hypertext is text with hyperlinks.

Every word with an *asterisk* will have to be *filled/filled in* by a student.

Bilberries (*Vaccinium myrtillus*), also known as *blue:A lovely color*berries are edible, nearly black berries found in nutrient-poor soils. Whereas *Cloud*berries (*Rubus chamaemorus*) are edible orange berries similar to raspberries or blackberries found in alpine and arctic tundra.

Percentage Correct	Feedback
<25%	Not there yet. Please study chapter XYZ of this learning unit in more detail to understand the basics of this topic.
25% - 74%	You have a first grasp of the topic but there is still a lot missing. Consider revisiting chapter XYZ of this learning unit to deepen your knowledge.
75% - 99%	Good job, nearly there! There are still a few missing links but you are on a good path.
100%	Perfect score! Congratulations!

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Notes

Please provide each task as a text block separated by a new line. Words or parts of words can be used. Blanks are added with an asterisk (*) in front and behind the correct word/phrase. Alternative answers are separated with a forward slash (/). You may add a textual tip, using a colon (:) in front of the tip. Please provide feedback for the whole block of questions as shown in the table above.

Essay Task

An open question format. Essay tasks allow for open questions which can be answered as a self-test.

Example

Task:

Please describe the novel "The Hobbit" by J.R.R. Tolkien with at least 100 characters and up to 500 characters.

Sample solution text:

The book is about a guy called Bilbo. One day, he gets some unexpected visitors: Gandalf, the wizard and nine dwarfs. Some of them had strange names such as Gloin or Dori. Together, they go on an adventure and try to retrieve a treasure from Smaug, an old dragon. Bilbo somewhat betrays the dwarfs, but still is the hero. Bilbo is a good guy.

Keywords:

Keyword	Variation
Bilbo	
Gandalf	
Smaug	dragon
dwarfs	
adventure	quest; journey

Notes

Please provide the essay question as shown in the example above. It is also possible to provide a **help text**. The **sample solution text** will be provided to the students after an answer has been submitted. **Keywords** or phrases to look for should be provided as a table. These keywords are used to give the students a feedback once

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they submit their answer. Use an asterisk '*' as a wildcard for one or more characters. Add optional **variations** for a keyword. Example: For a 'city' add alternatives 'town', 'municipality' etc. Points will be awarded if the user includes any of the specified alternatives.

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Sorting Tasks

You can use sorting tasks with words and images. You can even define hotspots on an image to indicate where an area of interest is which a student should identify. We recommend looking at the digital representations of the following examples (<https://d.pr/uZQm1g>) to better understand the task structure.

Sort-the-Words

Examples

Statements	Options
The inventor of the hyperlink was *...*	Tim Berners-Lee
<i>Feedback: Sir Timothy John Berners-Lee (born 8 June 1955), also known as TimBL, is an English computer scientist best known as the inventor of the World Wide Web. He is a Professorial Fellow of Computer Science at the University of Oxford and a professor at the Massachusetts Institute of Technology (MIT).</i>	
Microsoft was founded by *...*	Bill Gates
<i>Feedback: William Henry Gates III (born October 28, 1955) is an American business magnate, software developer, investor, author, and philanthropist. He is a co-founder of Microsoft Corporation. During his career at Microsoft, Gates held the positions of chairman, chief executive officer (CEO), president and chief software architect, while also being the largest individual shareholder until May 2014. He is one of the best-known entrepreneurs and pioneers of the microcomputer revolution of the 1970s and 1980s</i>	

Notes

This task is similar to the “Fill in the blank” task but provides the students with a set of limited words or phrases to be used and sorted correctly. The words or phrases with an asterisk will be offered to the student to choose from and must be dragged to the correct places in the sentence. Please separate the tasks by a new line. Droppable words are added with an asterisk (*) in front and behind the correct word/phrase. You may add a textual tip, using a colon (:) in front of the tip. For every empty spot there is only one correct word. You may add feedback to be displayed when a task is completed. Use '+' for correct and '-' for incorrect feedback.

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Drag-and-Drop Task

Examples

Example 1

Task Description:

Please sort the different words to their respective buckets. Which of these words is a HTML element and which is a markup language?

HTML Elements
Hyperlinks Headings
<i>Feedback: An HTML element is a type of HTML (Hypertext Markup Language) document component, one of several types of HTML nodes (there are also text nodes, comment nodes and others). HTML document is composed of a tree of simple HTML nodes, such as text nodes, and HTML elements, which add semantics and formatting to parts of document (e.g., make text bold, organize it into paragraphs, lists and tables, or embed hyperlinks and images).</i>

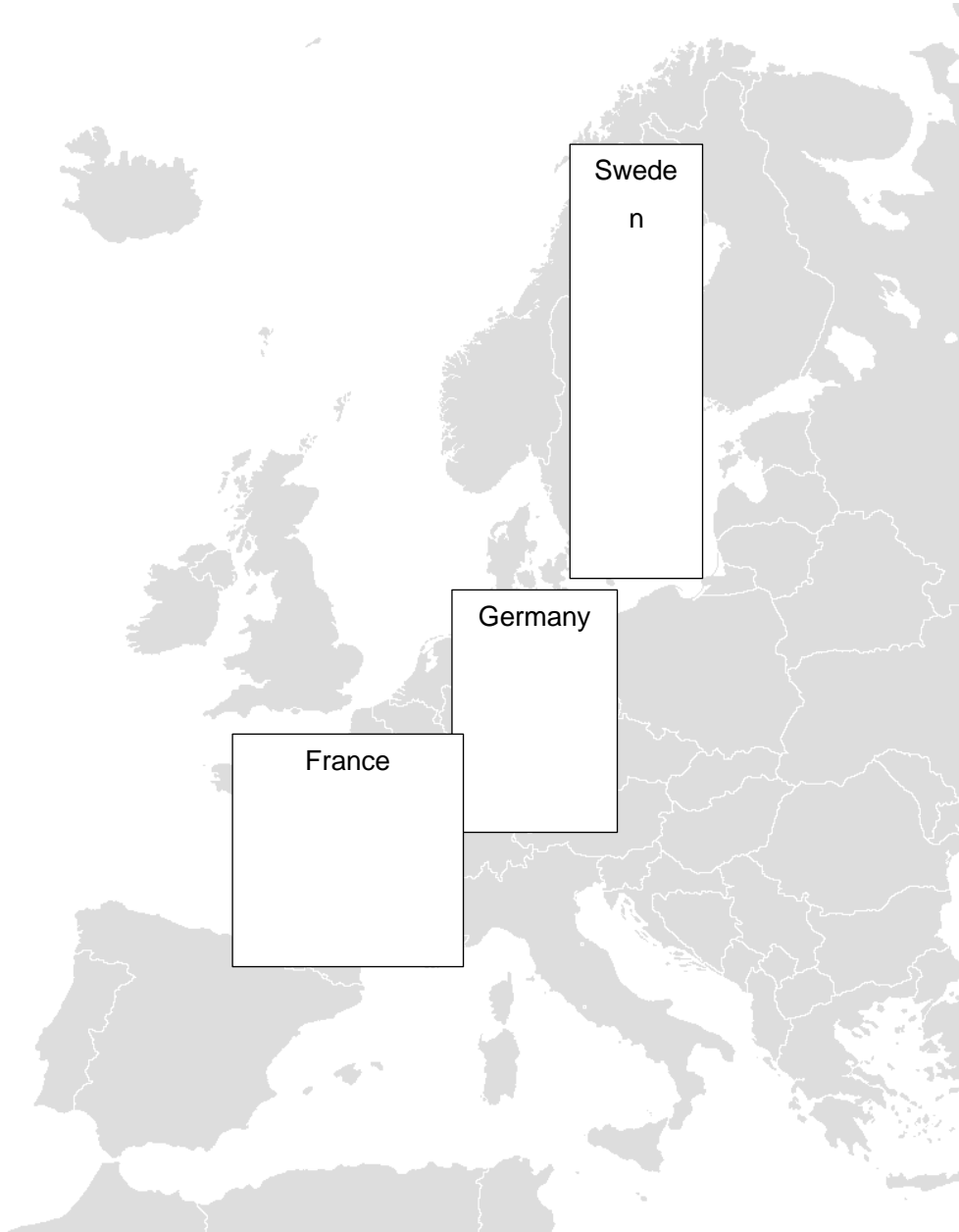
Markup Languages
Markdown Latex
<i>Feedback: In computer text processing, a markup language is a system for annotating a document in a way that is syntactically distinguishable from the text, meaning when the document is processed for display, the markup language is not shown, and is only used to format the text.</i>

Wrong Answers
JavaScript CSS

Example 2

Task description:

Please identify the three countries Sweden, Germany and France on the given map.



Feedback Germany: Germany, officially the Federal Republic of Germany, is a country at the intersection of Central and Western Europe. It is situated between the Baltic and North seas to the north, and the Alps to the south; covering an area of 357,022 square kilometres (137,847 sq mi), with a population of over 83 million within its 16 constituent states.

Feedback Sweden: Sweden, officially the Kingdom of Sweden, is a Nordic country in Northern Europe.[20] It borders Norway to the west and north, Finland to the east, and is connected to Denmark in the southwest by a bridge-tunnel across the Öresund Strait. At 450,295 square kilometres (173,860 sq mi), Sweden is the largest country in Northern Europe, the third-largest country in the European Union, and the fifth largest country in Europe.

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Feedback France: France, officially the French Republic, is a country primarily located in Western Europe, consisting of metropolitan France and several overseas regions and territories. The metropolitan area of France extends from the Rhine to the Atlantic Ocean and from the Mediterranean Sea to the English Channel and the North Sea.

Notes

Please provide the necessary information for the tasks as shown above. To qualify for a drag-and-drop task you should at least provide a **task description, two different containers or drop-zones** in a picture and at least **two words or phrases to be dropped** (e.g. France, Germany, Sweden). You can also provide wrong answers which will be mixed in the right phrases (see Example 1). If possible, please provide pictures in a high quality and make sure that you have the usage rights. Please also provide the image file separately as a .jpg or .png. Images should be at least 1024px wide at 72 ppi.

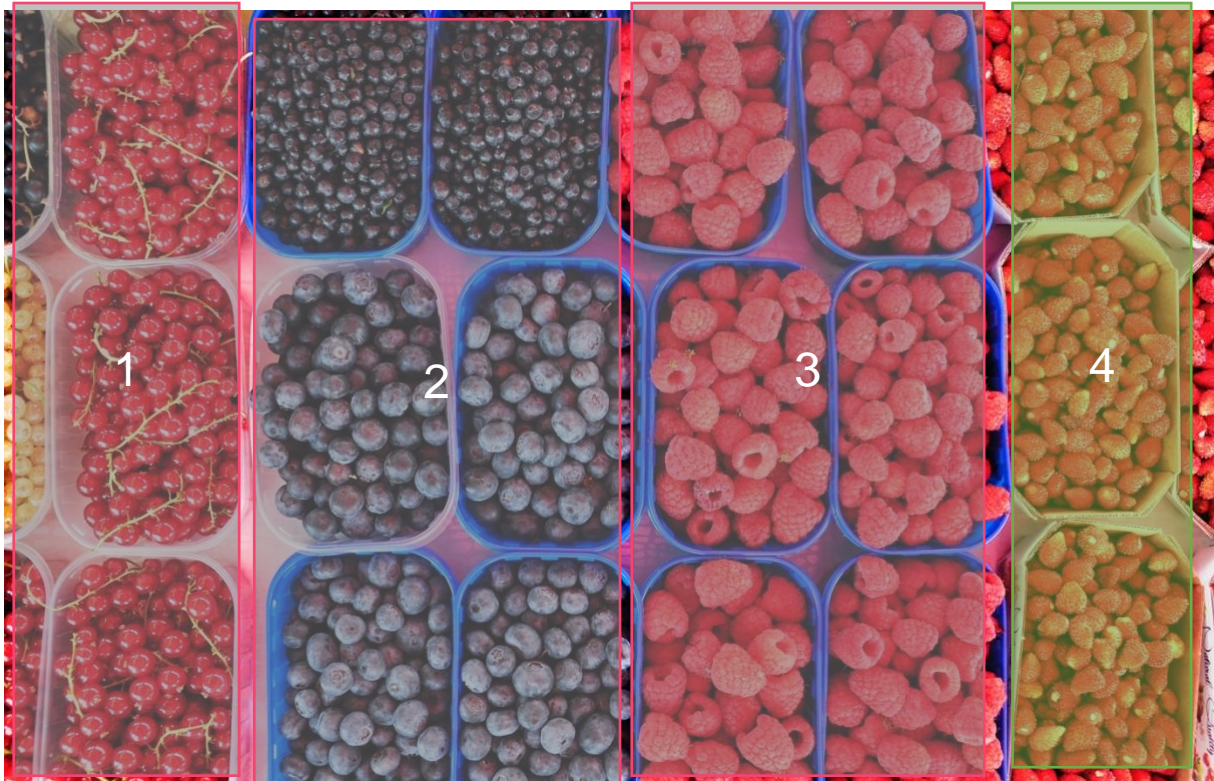
Hotspot Tasks

Examples

Example 1

Task description:

Please identify the strawberries in this picture.



Feedback 1 (incorrect): Sorry, these are gooseberries. Please try again.

Feedback 2 (incorrect): Sorry, these are blueberries. Please try again.

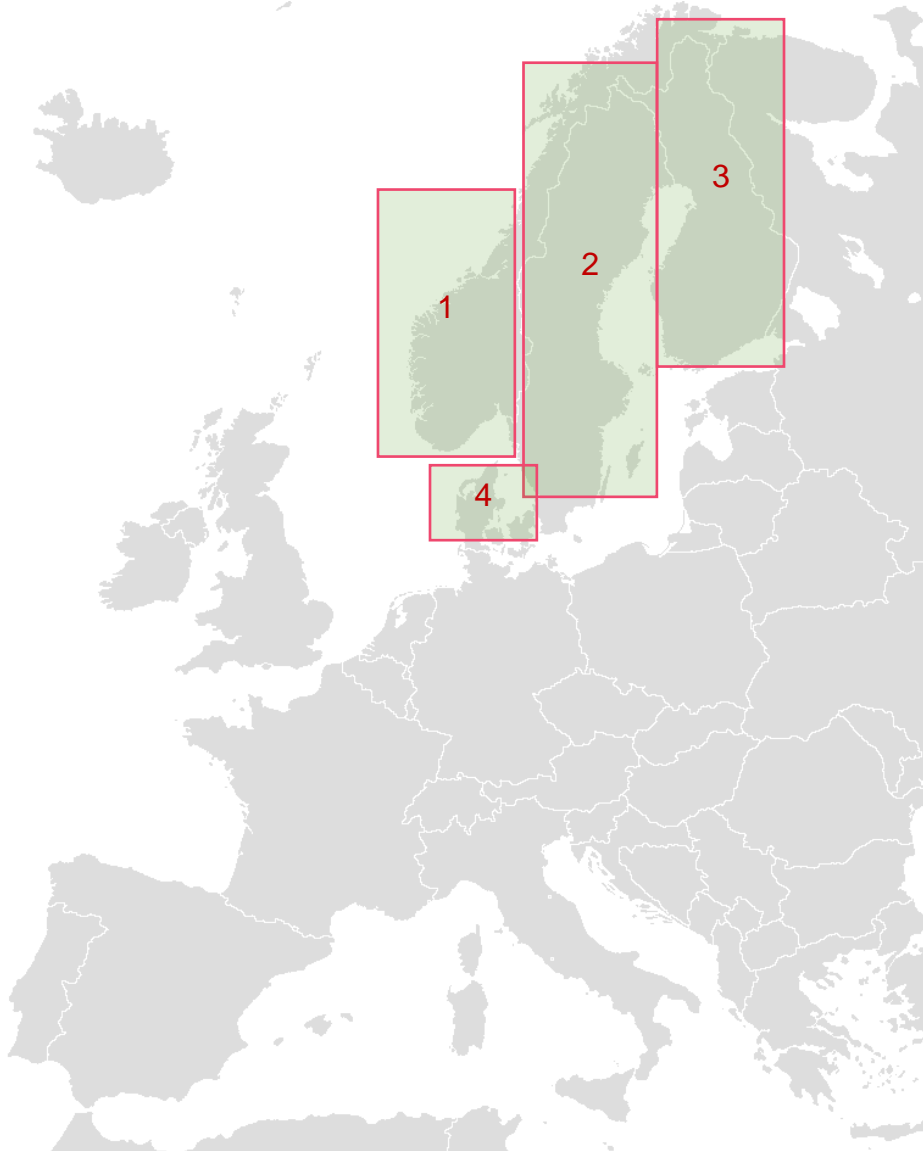
Feedback 3 (incorrect): Sorry, these are raspberries. Please try again.

Feedback 3 (correct): Yes, these are forest strawberries and they are really tasty.

Example 2

Task description:

Can you identify a Scandinavian country in this picture?



Feedback 1: Yes, you identified Norway!

Feedback 2: Yes, you identified Sweden!

Feedback 3: Yes, you identified Finland!

Feedback 4: Yes, you identified Denmark!

Notes

Please provide the necessary information for the tasks as shown above. To qualify for a hotspot task you should at least provide a **task description**, an **image** to

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identify something on, a feedback text for **correct answers** and a feedback text for **wrong answers**. It is possible to define different correct and incorrect hotspots in one image but it is not possible to answer different questions in one task. If you choose to include different correct hotspots please provide separate correct feedback for each one (see example 2). If possible, please provide pictures in a high quality and make sure that you have the usage rights. Please also provide the image file separately as a .jpg or .png. Images should be at least 1024px wide at 72 ppi.

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Dialog Cards

Self test format with some dialog cards. Students can test and train their understanding of the content.

Examples

Front	HTML is a ...
Back	markup language

Front	Hyperlinks are used to ...
Back	Reference to data

Notes

Please provide the information as shown above in table form. If you want you can provide an image to go with the card.