

The following survey consists of three parts. In the first, you will be asked questions about your experience with wayfinding and spatial tasks. In the second part you will be presented with a series of images displaying a route, for each image your task is to rate how difficult the route looks. Last, you will be given a short cognitive test.

This survey requires a screen resolution of 1920 x 1080 and a mouse and keyboard. You cannot go back to a previous page, and **do not press the back button**, doing so will cause all progress to be lost.

Participation is completely voluntary and will not influence any future relations with Umeå University. You can abandon the survey at any time by pressing ESCAPE or by closing the browser window.

The aim of this survey is to explore how humans evaluate routes and is part of research at Umeå University. Your performance will not be judged in any way, and all information collected will be handled such that no unauthorized persons can access them.

In case of any questions or concerns, please contact any of the researchers or the Data Protection Officer at Umeå University as listed below. It is also possible to submit a complaint to The Swedish Data Protection Authority.

By continuing you confirm that you have read and understood the information on this page, that you have received answers to your questions regarding the aim of and conductance of this survey, and that you freely agree to participate.

If you agree to participate, please indicate that you agree below, and click next to start the survey. Otherwise, you may just close this webpage now.

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1. Do you agree to participate in this study? *

Yes

Start

What gender do you identify as? *

What is your age? *

In the past 12 months, how often have you used a navigation service on your phone? (For example, Google Maps) *
 More than once a week
 About once a week
 More than once a month
 About once a month
 About every other month
 About once in the past six months
 About once a year
 Never

In the past 12 months, how often have you followed a route recommended by a navigation service? (For example, Google Maps) *
 More than once a week
 About once a week
 More than once a month
 About once a month
 About every other month
 About once in the past six months
 About once a year
 Never

Do you have any of the following hobbies? (Check any activities that may apply) *
 Sailing
 Hiking / Backpacking
 Orienteering
 Amateur astronomy
 None of the above

Next

For each item, respond with how you have felt in -the past 7 days- *
In the past 7 days...

| | Never | Rarely | Sometimes | Often | Always |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I felt fearful | <input type="radio"/> |
| I found it hard to focus on anything other than my anxiety | <input type="radio"/> |
| My worries overwhelmed me | <input type="radio"/> |
| I felt uneasy | <input type="radio"/> |
| I felt nervous | <input type="radio"/> |
| I felt like I needed help for my anxiety | <input type="radio"/> |
| I felt anxious | <input type="radio"/> |
| I felt tense | <input type="radio"/> |

Next

The items in the questionnaire below refer to situations and experiences that may cause tension, apprehension, or anxiety.
For each situation, choose the response that describes how much it would make you feel anxious. Work quickly, but be sure to think about each item.

For each situation, choose the response that describes how much it would make you feel anxious. *

| | Not at all | A little | A fair amount | Much | Very much |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Asked to recreate your favorite artist's signature from memory | <input type="radio"/> |
| Finding your way back to your hotel after becoming lost in a new city | <input type="radio"/> |
| Asked to imagine the 3-dimensional shape created by rotating a complex 2-dimensional plane on an exam | <input type="radio"/> |
| Tested on your ability to create a drawing or painting that reproduces the details of a photograph as precisely as possible | <input type="radio"/> |
| Imagining on a test what a 3-dimensional landscape model would look like from a different point of view | <input type="radio"/> |
| Asked to do the navigational planning for a long car trip | <input type="radio"/> |
| Asked to recall the exact details of a relative's face whom you have not seen in several years | <input type="radio"/> |
| Memorizing routes and landmarks on a map for an upcoming exam | <input type="radio"/> |
| Asked to imagine the motion of a mechanical system given a static picture of the system | <input type="radio"/> |
| Trying a new route that you think will be a shortcut without the benefit of a map | <input type="radio"/> |
| Asked to imagine and describe the appearance of a radio announcer you've never actually seen | <input type="radio"/> |
| Using a 3-dimensional model of an airport to complete a homework assignment | <input type="radio"/> |
| Asked to give a detailed description of a person's face whom you've only met once | <input type="radio"/> |
| Trying to get somewhere you have never been to before in the middle of an unfamiliar city | <input type="radio"/> |
| Asked to recall the shade and pattern of a person's tie you met for the first time the previous evening | <input type="radio"/> |
| Asked to determine how a series of pulleys will interact given only a 2-dimensional diagram | <input type="radio"/> |
| Asked to imagine and mentally rotate a 3-dimensional figure | <input type="radio"/> |
| Finding your way to an appointment in an area of a city or town with which you are not familiar | <input type="radio"/> |
| Asked to imagine a 3-dimensional structure of the human brain from a 2-dimensional image | <input type="radio"/> |
| Describing in detail the cover of a book to a bookseller because you've forgotten both the title and author of the book | <input type="radio"/> |
| Asked to imagine the 3-dimensional structure of a complex molecule using only a 2-dimensional picture for reference | <input type="radio"/> |
| Finding your way back to a familiar area after realizing you have made a wrong turn and become lost while driving | <input type="radio"/> |
| Asked to follow directions to a location across town without the use of a map | <input type="radio"/> |
| Given a test in which you were allowed to look at and memorize a picture for a few minutes, and then given a new, similar picture and asked to point out any differences between the two pictures | <input type="radio"/> |

Next

The following statements ask you about your spatial and navigational abilities, preferences, and experiences. After each statement, you should select a number to indicate your level of agreement with the statement.

Select "1" if you strongly agree that the statement applies to you, "7" if you strongly disagree, or some number in between if your agreement is intermediate. Select "4" if you neither agree nor disagree.

After each statement, select a number to indicate your level of agreement. *

| | 1 "Strongly agree" | 2 | 3 | 4 | 5 | 6 | 7 "Strongly disagree" |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I am very good at giving directions | <input type="radio"/> |
| I have poor memory for where I left things | <input type="radio"/> |
| I am very good at judging distances. | <input type="radio"/> |
| My "sense of direction" is very good. | <input type="radio"/> |
| I tend to think of my environment in terms of cardinal directions (N, S, E, W). | <input type="radio"/> |
| I very easily get lost in a new city. | <input type="radio"/> |
| I enjoy reading maps. | <input type="radio"/> |
| I have trouble understanding directions. | <input type="radio"/> |
| I am very good at reading maps. | <input type="radio"/> |
| I don't remember routes very well while riding as a passenger in a car. | <input type="radio"/> |
| I don't enjoy giving directions. | <input type="radio"/> |
| It's not important to me to know where I am. | <input type="radio"/> |
| I usually let someone else do the navigational planning for long trips | <input type="radio"/> |
| I can usually remember a new route after I have traveled it only once. | <input type="radio"/> |
| I don't have a very good "mental map" of my environment. | <input type="radio"/> |

Next

In the next part of the survey you will be asked to rate how difficult a route looks.

Instructions:

First, the image with the route will be shown for 20 seconds. Use this time to assess how difficult it looks.

All routes are a suggestion on how to walk to your hotel from a train station, every route is 2km long.

On next the page, you will rate the difficulty of the route along three scales:

- How simple or complex the route looks.
- How easy or demanding the route looks.
- How forgiving or punishing the route looks.

For example, how forgiving or punishing a route looks may be how it would feel to make a mistake when you follow it.

Last, please answer with a few words what you thought looked difficult about the route, if you are not sure you can write "not sure" in the text box.

Consider the scenario below when you asses the route.

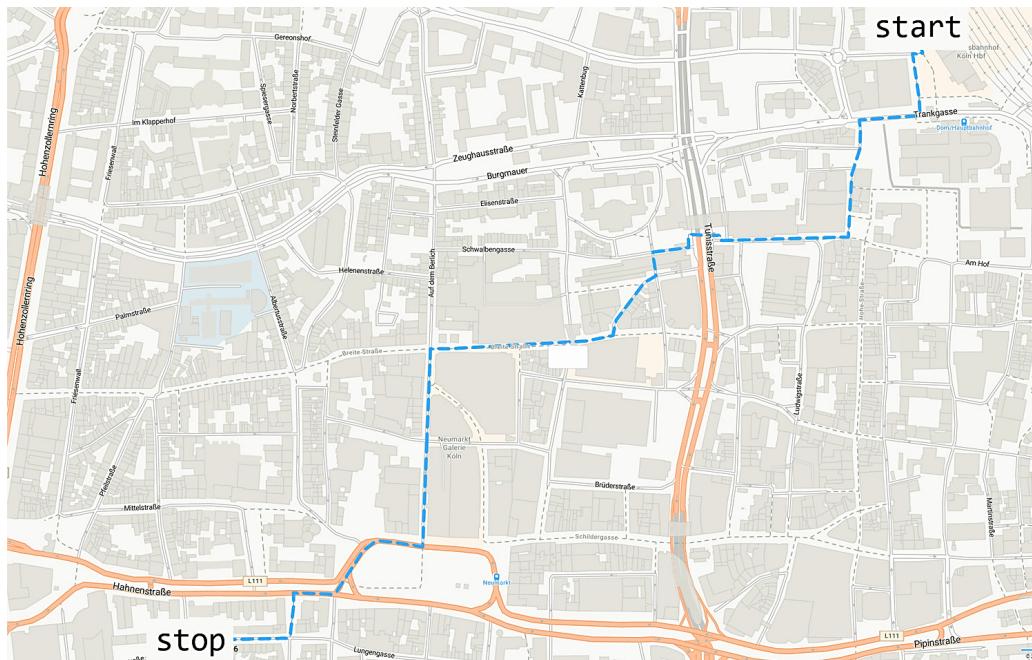
Scenario:

You have just arrived by train to a city you are unfamiliar with, and now you have to find your way to the hotel on foot. You pick up your phone and type in the address of the hotel on a popular navigation service app, then after a few seconds the app presents you with a 2km long route that you can follow to the hotel.

How difficult does the route look?

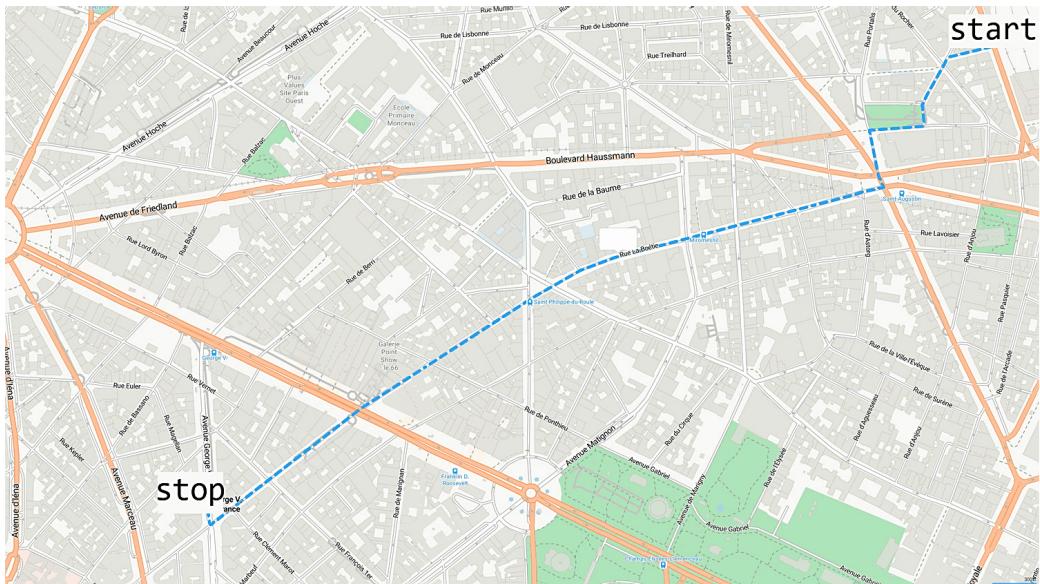
Are you ready to begin? * Yes

Next



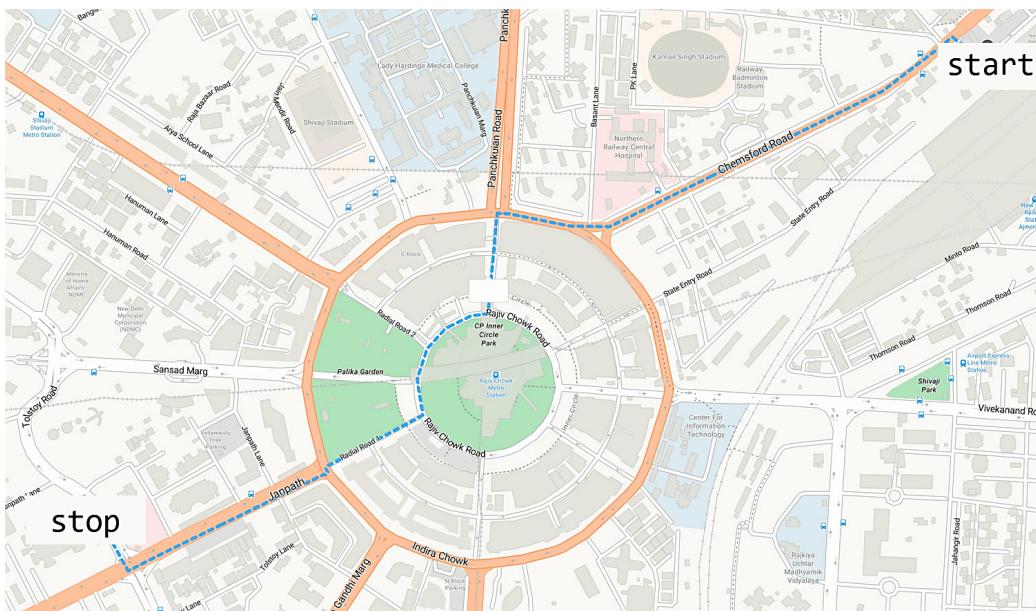
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



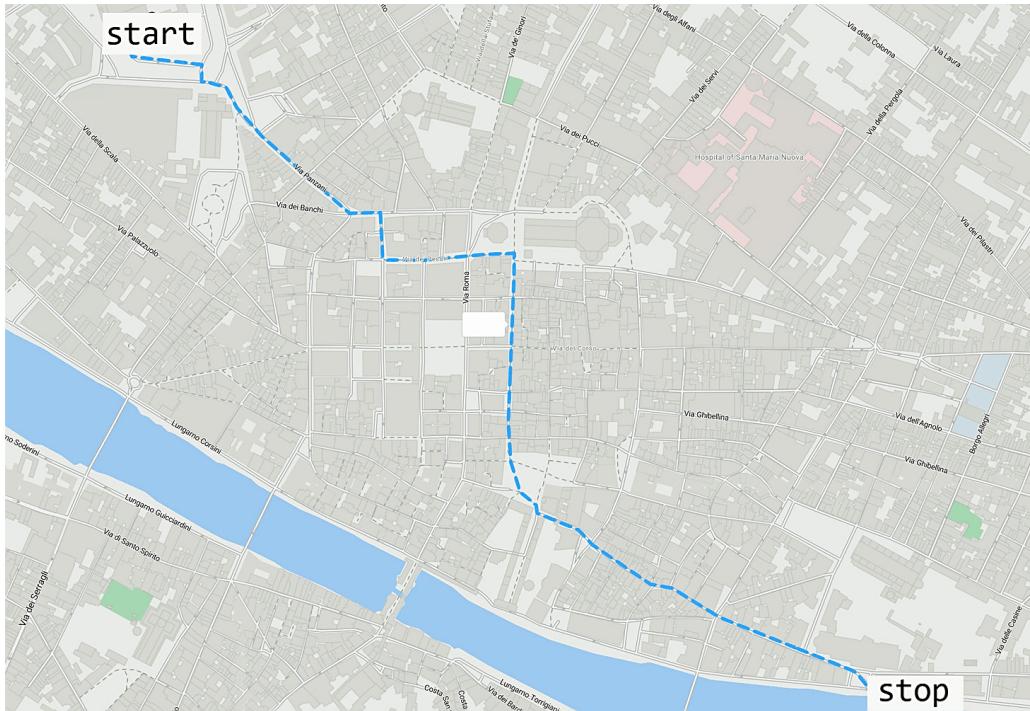
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



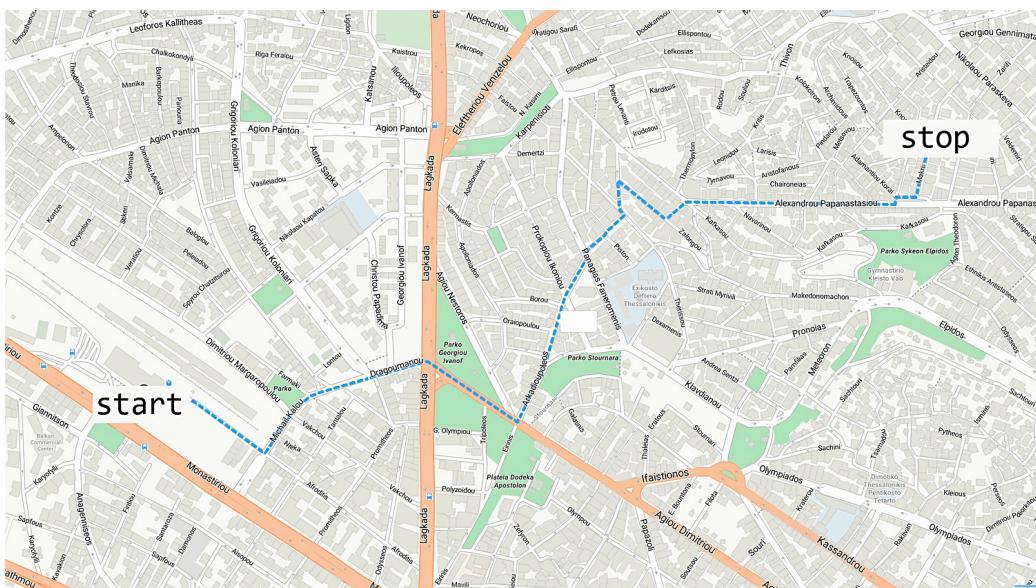
| | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | <input type="radio"/> |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | <input type="radio"/> |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | <input type="radio"/> |
| What looked difficult about this route? * | <input type="text"/> | | | | | |

Next



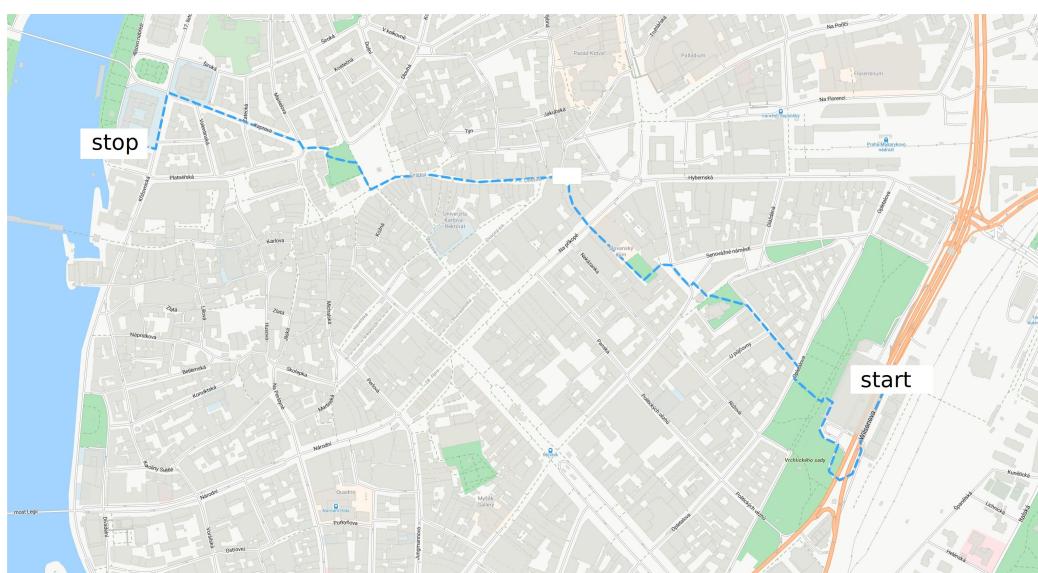
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



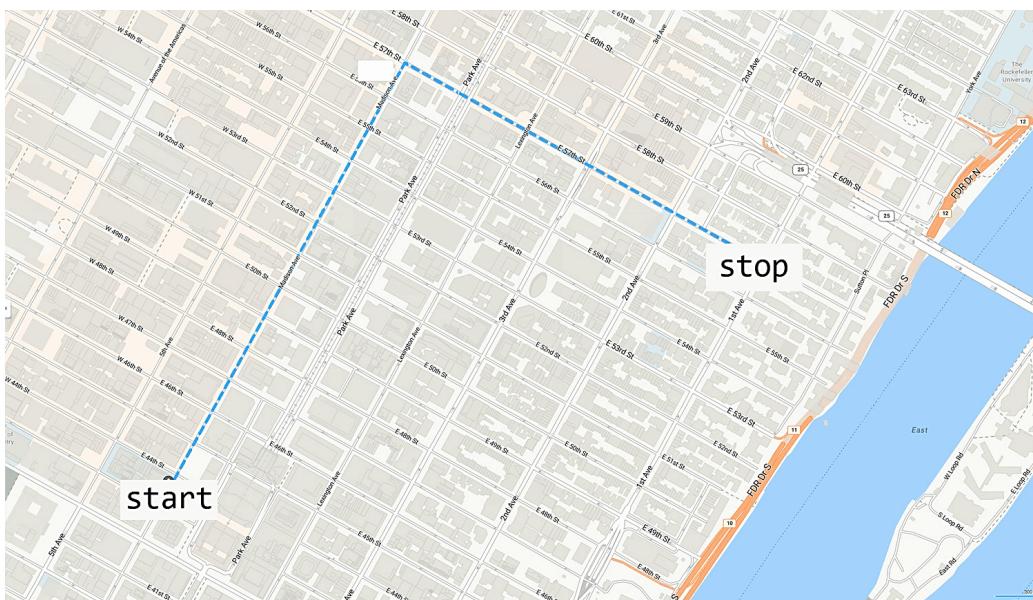
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
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| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



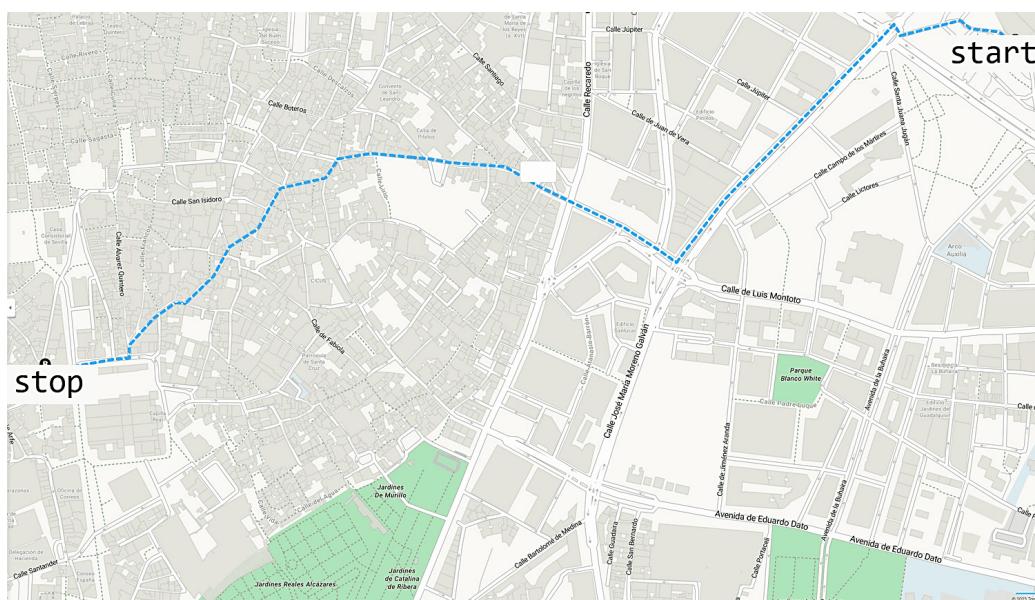
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



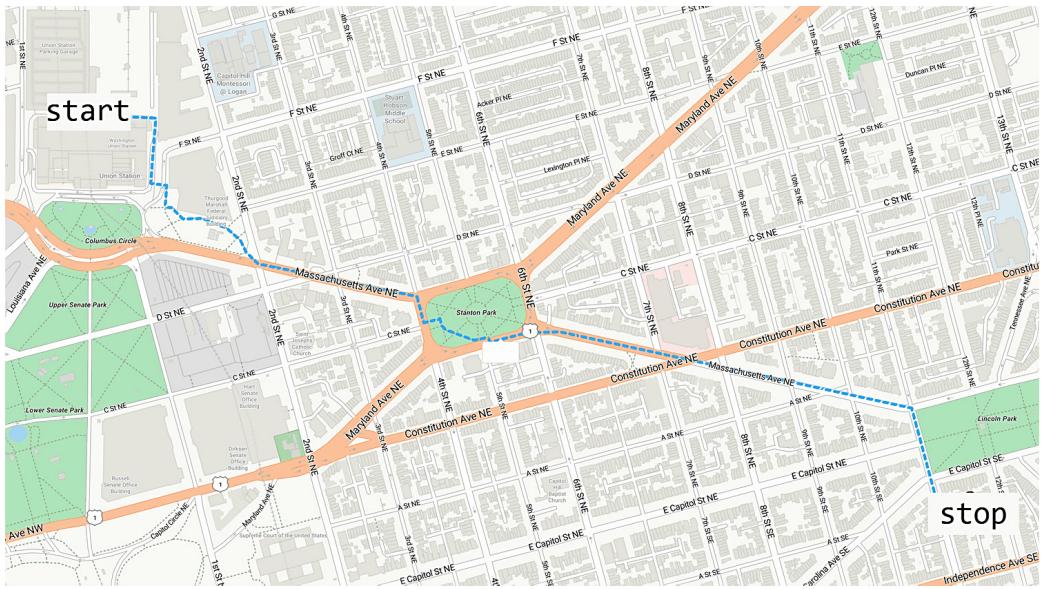
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



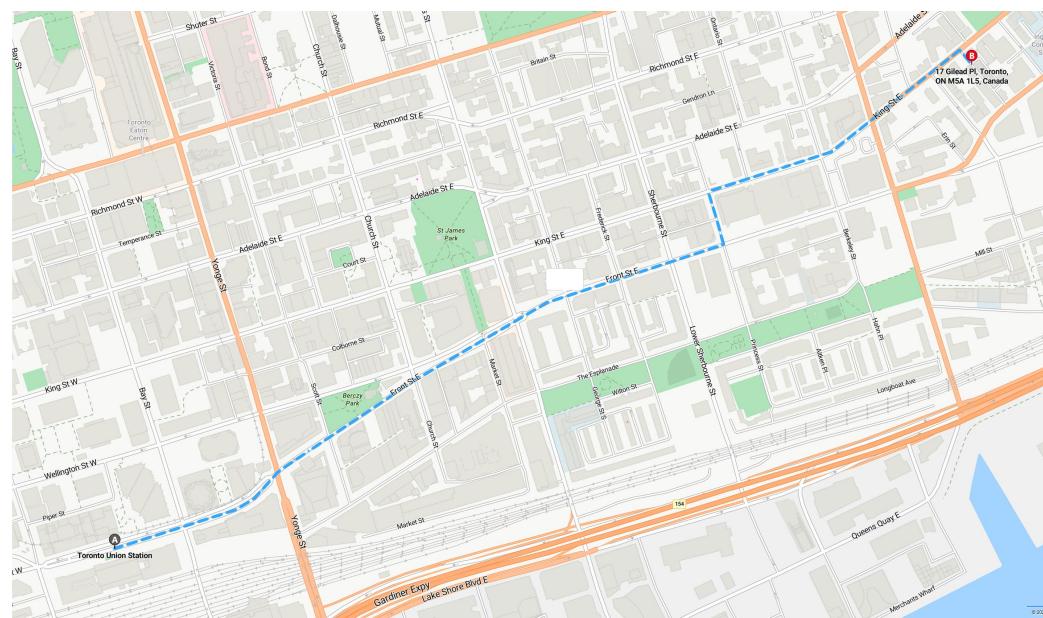
| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? | | | | | | |

Next



| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next



| | | | | | | |
|--|---|---|---|---|---|--------------------|
| 1 "Very simple" | 2 | 3 | 4 | 5 | 6 | 7 "Very complex" |
| How simple or complex did the route look? | | | | | | |
| 1 "Very easy" | 2 | 3 | 4 | 5 | 6 | 7 "Very demanding" |
| How easy or demanding did the route look? | | | | | | |
| 1 "Very forgiving" | 2 | 3 | 4 | 5 | 6 | 7 "Very punishing" |
| How forgiving or punishing did the route look? | | | | | | |
| What looked difficult about this route? * | | | | | | |

Next

Did you recognize what cities the route took place in? If so, which? (Write the names of the cities separated by a comma) *

Next

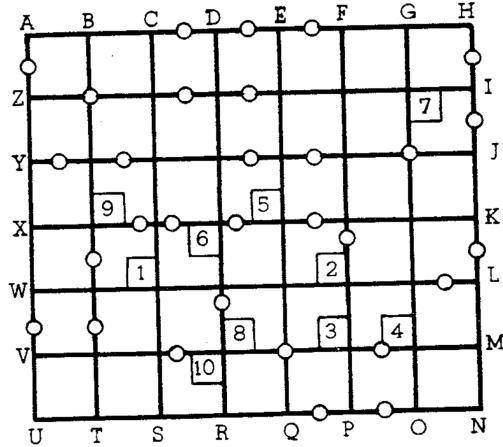
Practice

This is a test of your ability to find the shortest route between two places as quickly as possible. The drawing below is a map of a city, the dark lines are streets, the circles are road-blocks, and the numbered squares are buildings. You are to find the shortest route between two lettered points. The number on the building passed is your answer.

Rules:

- 1. The shortest route will always pass along the side of **one and only one** of the numbered buildings.
- 2. A building is only considered as having been passed if a route passes a side of a building, touching corners do not count.
- 3. A route cannot pass through road-blocks that are represented by circles.
- 4. The same numbered building may be used on more than one route.

Look at the sample map below and the correct answers at the bottom of the page.



What building does the shortest route pass? *

A to Z passes building: | 1

E to S passes building: |

P to J passes building: |

V to K passes building: |

O to F passes building: |

G to M passes building: |

D to Q passes building: |

F to T passes building: |

The answer to the other practice problems are as follows:

E to S passes building: 5

P to J passes building: 3

V to K passes building: 2

O to F passes building: 4

G to M passes building: 4

D to Q passes building: 6

F to T passes building: 5

Your score on this test will be the number of right answers. It will **not** be to your advantage to guess unless you have some idea which route is correct. Work as rapidly as you can without sacrificing accuracy.

On the next two pages, you will be shown two maps with the same task. You will have 3 minutes per page.

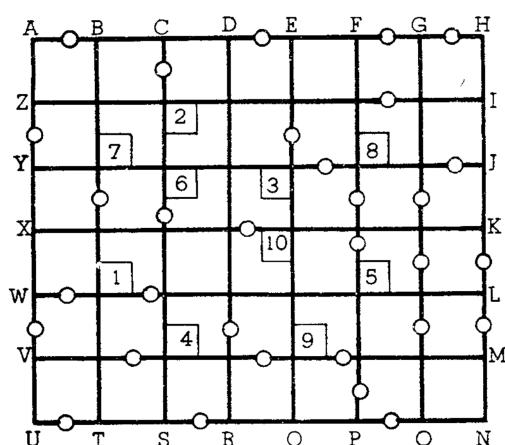
Are you ready to begin the test? You will have 3 minutes to complete the next page. *

Yes

Next

Part 1 of 2

What building does the shortest route pass?



F to I passes building:

U to D passes building:

B to W passes building:

Z to E passes building:

C to K passes building:

X to L passes building:

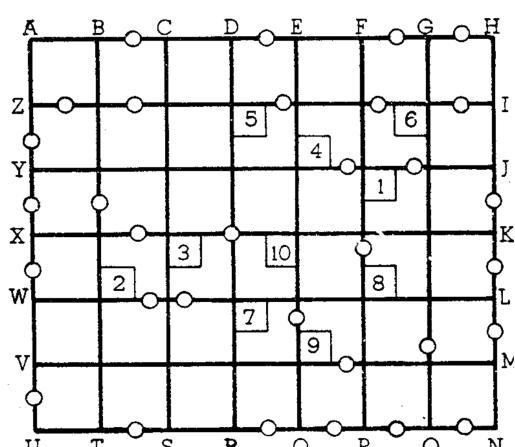
Y to R passes building:

M to J passes building:

P to M passes building:

N to T passes building:

What building does the shortest route pass?



U to B passes building:

N to Q passes building:

S to X passes building:

Y to P passes building:

Y to G passes building:

F to L passes building:

A to E passes building:

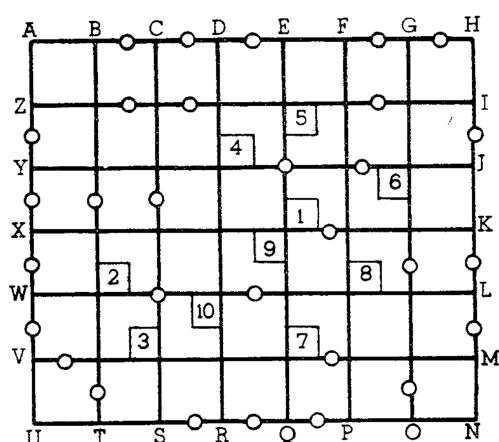
K to D passes building:

Q to C passes building:

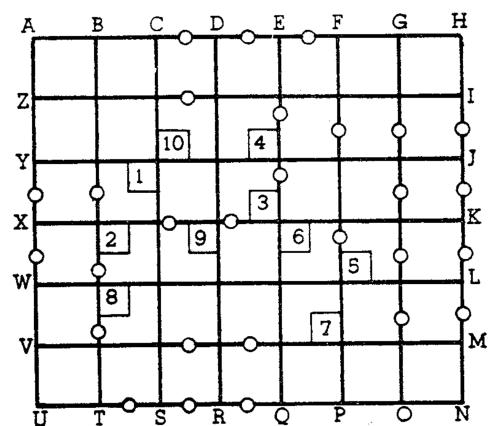
N to H passes building:

[Next](#)

Part 2 of 2



What building does the shortest route pass?

Y to R passes building: E to X passes building: L to F passes building: D to K passes building: W to Q passes building: C to W passes building: T to B passes building: V to P passes building: H to F passes building: O to Z passes building: 

What building does the shortest route pass?

S to Y passes building: X to R passes building: L to T passes building: I to R passes building: V to O passes building: J to E passes building: K to Q passes building: F to C passes building: Q to W passes building: D to K passes building: [Next](#)

Thank you for your participation!

If you have any questions, feedback or other inquiries you can contact: arvid.horned@umu.se

Complete