General Computer Science 1 (AI1)
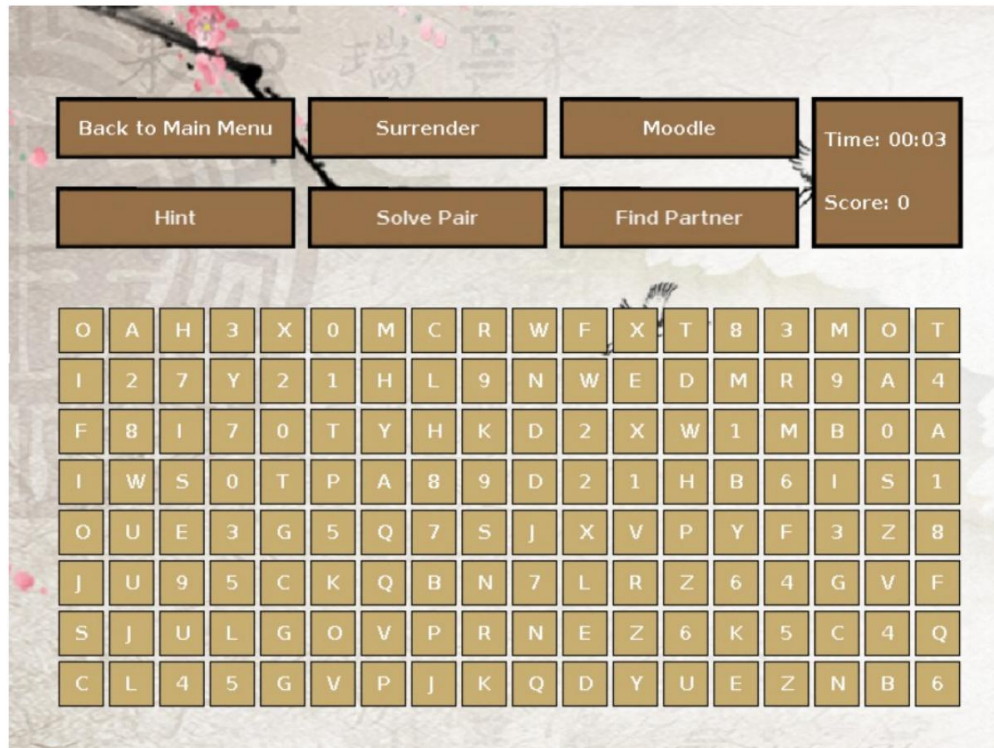
Summer semester 2023
programming project
organizational and content

TECHNISCHE
UNIVERSITÄT
DARMSTADT

ESA
Embedded Systems & Applications

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Performance

- Organizational

- task

- Details

- Questions

**Allgemeine Informatik 1
Sommersemester 2023**

Programmierprojekt, Version: 18. Mai 2023

Bearbeitungszeit: 07.06.2023 bis 05.07.2023

Organisatorisches

Wichtig: Lesen Sie sich zunächst die folgenden Formalitäten genau durch. Sollten diese nicht exakt beachtet werden, können wir Ihre Abgabe unter Umständen nicht werten. Lesen Sie die Aufgabenstellung vollständig durch, bevor Sie mit der Implementierung beginnen.

- Beachten Sie alle Hinweise zum Programmierprojekt auf der Seite:
  https://moodle.informatik.tu-darmstadt.de/mod/assign/view.php?id=55356

- Nutzen Sie unsere Vorgabe und tragen Sie in der enthaltenen Datei README.txt Ihren Namen, Ihre Matrikelnummer und Ihre TU-ID (sowie bei Zweiergruppen die Daten Ihrer Partner*in!) ein.

- Bei Zweiergruppen reicht es aus, wenn die Lösung nur *einmal* hochgeladen wird. Sie sollten aber den*die Co-Autor*in in Moodle kennzeichnen.

- Abgabe des Projekts (spätestens bis zum **05.07.2023** um **22:00 Uhr**)

  – Verpacken Sie Ihr komplettes Projektverzeichnis in eine Standard-ZIP-Datei. Der Name muss aus den Initialen der Gruppenmitglieder und der Umgebung mit welcher Sie gearbeitet haben bestehen, also z. B. SG_bluej.zip bzw. SG_eclipse.zip. Bei Zweiergruppen entsprechend beide Namen, also z. B. SG_DL_bluej.zip.

  – Laden Sie die ZIP-Datei auf unserer moodle-Plattform hoch. **Keine** ZipX-, 7z- oder RAR-Archive! Eine genauere Anleitung zum Erstellen der Abgabe finden Sie auf Moodle im Bereich des Programmierprojekts.

  – Probieren Sie die Abgabe auf jeden Fall schon deutlich vor dem Abgabeschluss aus! Sie können mehrfach abgeben – bei mehrfachen Abgaben wird nur die zeitlich Letzte gewertet.

Announcements and Appointments

Important appointments:

- Participation in the programming project only if you registered for the exam are!

- **06/07/2023:** First explanation of the task and provision of this on the learning platform Moodle.

- **July 5th, 2023, 10:00 p.m.:** Deadline for programming project!

Evaluation:

- The exam for this lecture consists of 2 parts: ÿProgramming
  project (up to 25 points) ÿFinal exam (up to 75
  points)
- In total you must reach 50 points to pass!

organizational

!!! Important: The programming project is part of the exam !!! • This means that we must and will strictly comply with the rules in order to guarantee fair conditions for all participants.

Organizational:

• If possible, work in **groups of two .**

ÿ in exceptional cases alone (check with Larissa beforehand)

• You can search for a suitable look for a partner.

• Students from the collective group have already been split up. • A **TUCaN registration**

is required. • The **submission** takes place via the learning

platform Moodle. • After the submission deadline, the solutions will be

evaluated. • The **documentation of the source code** is included in the

evaluation. • Finally, **attestations** take place.

Tested

• Attestations are expected to take place from **July 10, 2022 to July 28, 2022 (zoom) .** • The exercise

supervision is canceled from **10.07.** during this period!

Process:

• The tutor asks questions about the project during the attestation. •
Each group member must review all aspects of the submitted solution
   can explain!

• Otherwise there are point deductions for the respective student or in the
   In extreme cases, no points at all. •

We will announce more details about the procedure on Moodle.

implementation

Important: We provide updates and information in Moodle if this is necessary!

Working method:

• You can use an IDE of your choice. We recommend BlueJ or Eclipse. • Important:
After submission, the project must be able to run directly under BlueJ or Eclipse and also contain a corresponding **README file .**

Notes on the assessment:

• There are deductions for deficiencies in formatting or comments. •
Submissions that cannot be compiled are rated with **0 points .**

implementation

Important: We provide updates and information in Moodle if this is necessary!

Procedure (1/2):

- First download the template for this programming project. It contains all the classes you need (minus the classes you will implement).

- We will instruct in detail which of the methods of the classes you should take a close look at. Most of the classes and methods are already complete.

implementation

Important: We provide updates and information in Moodle if this is necessary!

Procedure (2/2):

- Some methods are not yet implemented or contain only one "Dummy implementation" so that the project can be compiled. It is your task to complete these methods in the following.
- All other methods and classes of the default **must remain untouched remain,** also **no additional data fields** are allowed (except in own test classes).

- All methods that need to be changed contain TODOs and/or are described in the task.

The task: Shisen

• A board game called Shisen is to be implemented. • The game is a
2D variant of the classic mahjongg. • Aim of the game: Solve all
pairs of squares on the playing field.

Game Rules (1)

In the Shisen game, the aim is to solve all pairs of squares on the playing field in the shortest possible time.

• A matrix that has a fixed size serves as the playing field.
  • 8x18 (fields), 10x20 (fields with borders) •
A card can be selected with the mouse: • Left-click on any
  field ÿ select • Left-click on second field ÿ activate pair

• Condition: The connection between the two selected fields is allowed
  always consist of three straight lines and do not intersect any other fields that are still occupied.

Game Rules (2)

Additional functions

Cheats:

- There are standing at successful Implementation three cheats available. • Each

cheat deducts points from the score ÿ cheats can only be executed when

enough points have been collected.

Live Demo

Import project into BlueJ

- Download the framework and then unzip it:

  https://moodle.informatik.tu-darmstadt.de/mod/assign/view.php?id=55356

- Open BlueJ and add the required libraries under:

  Tools ÿ Preferences… ÿ Libraries ÿ Add File

- From there go to the unzipped project folder and add the three libraries: **eea.jar, lwjgl.jar** and **slick.jar**

- You must then restart BlueJ!

- Projektimport mit: Project ÿ Open Project…

Import project into BlueJ

Import project into BlueJ

Import project into Eclipse

• Download the framework (do not unzip it!):

  https://moodle.informatik.tu-darmstadt.de/mod/assign/view.php?id=55356

• You only have to add the project by:

  File ÿ Import ÿ General ÿ Existing Projects into Workspace ÿ Select
  archive file ÿ Browse

• Done! You can start implementing right away.

• You can close the "Welcome" page directly.

Import project into Eclipse

Import project into Eclipse

Import project into Eclipse
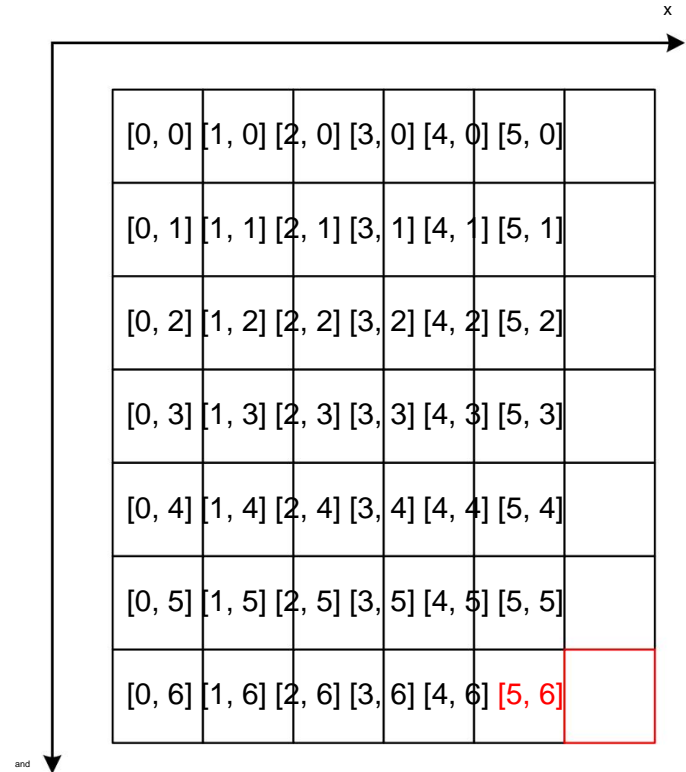
start project

- If you have implemented tasks 1 and 2 completely, the program should
  compile and start. • Attention: The game can be
  started but not played yet
    become.

- To launch, you must call the main method of the **Launch.** class
  carry out. •
  You can find these in the view
  package. • For BlueJ, one should not open the view package before running task
    1 & 2 done.

Field notes

- In the task, for the representation of a coordinate, the
  Format **[x, y]** used. The array with coordinates x=3 and y=1 is represented as
  [3, 1].

- When accessing an element in the game field, you can therefore also
  use grid[x][y] directly.

Field notes

- Would you like to access the red box at the bottom right?

- Coordinates are x=5 and y=6

ÿ Access in code is done with: grid[5][6]

[0, 0]	[1, 0]	[2, 0]	[3, 0]	[4, 0]	[5, 0]
[0, 1]	[1, 1]	[2, 1]	[3, 1]	[4, 1]	[5, 1]
[0, 2]	[1, 2]	[2, 2]	[3, 2]	[4, 2]	[5, 2]
[0, 3]	[1, 3]	[2, 3]	[3, 3]	[4, 3]	[5, 3]
[0, 4]	[1, 4]	[2, 4]	[3, 4]	[4, 4]	[5, 4]
[0, 5]	[1, 5]	[2, 5]	[3, 5]	[4, 5]	[5, 5]
[0, 6]	[1, 6]	[2, 6]	[3, 6]	[4, 6]	[5, 6]

x

and

Notes to task

- As soon as you start implementing the highscore classes (task 4), problems with the highscore file may arise as it may have been written incorrectly.

- If new errors occur there, then you could first try to delete the "highscore.hs" file.

- The file will be recreated when a new high score is achieved became.

Moodle-Forum

- If you have any questions, use the programming project forum in Moodle

    - [Task] Question • Ex.:

    [5.1a] How …

- **Do not upload any code!**

- If there are concerns regarding the programming project that cannot be clarified via the Moodle forum, we will try to clarify this via Zoom in a kind of consultation hour.

- Please note that the **programming project is part of the exam** is!

    ÿ **We can only give you assistance, but nothing reveal solutions.**

levy

Plagiarismus

By submitting your solution, you confirm that you/your group are the sole
are the sole authors of all material!

Plagiarism ... •

is counted as an **attempt at fraud ,** ie the complete AI-1 exam is counted as not _____
passed (5.0) due to attempted cheating. • We will not

be able to distinguish between the author and the plagiarist, ie both works will be counted
as attempted fraud. • This means that "copy" and "have copied"

equally
be punished ... so are not a good idea!

• So don't leave your computer unattended and don't pass on USB sticks with your
project data or source code, for example!

More information on plagiarism at:

https://www.informatik.tu-darmstadt.de/studium_fb20/im_studium/studienbuero/
plagiarismus/index.de.jsp

contact

For further questions •

Website: MOODLE learning platform •

https://moodle.informatik.tu-darmstadt.de/course/view.php?id=1416

For practice

• First: Ask questions in the forum • Contact

your tutor... (assigned in MOODLE) • Contact the main tutor:

• Larissa Werner, larissa.werner@stud.tu-darmstadt.de

• To the lecture

• First: Ask questions in the forum • Contact

the organizers:

• Leon Böck, boeck@tk.tu-darmstadt.de • Dr.-

Ing. Florian Stock, stock@esa.tu-darmstadt.de