

Nguyễn Trần Hoàng Hạ - ITITI21127


HOMEWORK EXERCISES

Exercises 5: Search Functionality

Test Cases











Search Term	Expected Results	
"John"	Shows all students with "John" in name	Passed
"SV001"	Shows student with code SV001	Passed
"science"	Shows students in Computer Science/Data Science	Not passed because the require is Add search capability to find students by name or code
"" (empty)	Shows all students	Passed

5.1: Create Search Form

 **Student Management System**

Search Clear

+ Add New Student

ID	Student Code	Full Name	Email	Major	Created At	Actions
5	SV005	David Wilson	david.w@email.com	Computer Science	2025-11-08 14:18:26.0	 Edit  Delete
4	SV004	Sarah Davis	sarah.d@email.com	Data Science	2025-11-08 14:18:26.0	 Edit  Delete
3	SV003	Michael Brown	michael.b@email.com	Software Engineering	2025-11-08 14:18:26.0	 Edit  Delete
2	SV002	Emily Johnson	emily.j@email.com	Info	2025-11-08 14:18:26.0	 Edit  Delete
1	SV001	John Smith	john.smith@email.com	Computer Science	2025-11-08 14:18:26.0	 Edit  Delete

5.2: Implement Search Logic (12 points)

Student Management System

SV003

[+ Add New Student](#)

ID	Student Code	Full Name	Email	Major	Created At	Actions
3	SV003	Michael Brown	michael.b@email.com	Software Engineering	2025-11-08 14:18:26.0	Edit Delete

Bonus (+2 points): Highlight search term in results

Student Management System

SV005

[+ Add New Student](#)

ID	Student Code	Full Name	Email	Major	Created At	Actions
5	SV005	David Wilson	david.w@email.com	Computer Science	2025-11-08 14:18:26.0	Edit Delete

Student Management System

David Wilson

[+ Add New Student](#)

ID	Student Code	Full Name	Email	Major	Created At	Actions
5	SV005	David Wilson	david.w@email.com	Computer Science	2025-11-08 14:18:26.0	Edit Delete

Student Management System

John

[+ Add New Student](#)

ID	Student Code	Full Name	Email	Major	Created At	Actions
2	SV002	Emily Johnson	emily.j@email.com	Info	2025-11-08 14:18:26.0	Edit Delete
1	SV001	John Smith	john.smith@email.com	Computer Science	2025-11-08 14:18:26.0	Edit Delete











Student Management System

SearchClear+ Add New Student

ID	Student Code	Full Name	Email	Major	Created At	Actions
1	SV001	John Smith	john.smith@email.com	Computer Science	2025-11-08 14:18:26.0	 Edit  Delete

Student Management System

SearchClear+ Add New Student

ID	Student Code	Full Name	Email	Major	Created At	Actions
5	SV005	David Wilson	david.w@email.com	Computer Science	2025-11-08 14:18:26.0	 Edit  Delete
4	SV004	Sarah Davis	sarah.d@email.com	Data Science	2025-11-08 14:18:26.0	 Edit  Delete
3	SV003	Michael Brown	michael.b@email.com	Software Engineering	2025-11-08 14:18:26.0	 Edit  Delete
2	SV002	Emily Johnson	emily.j@email.com	Info	2025-11-08 14:18:26.0	 Edit  Delete
1	SV001	John Smith	john.smith@email.com	Computer Science	2025-11-08 14:18:26.0	 Edit  Delete

EXERCISE 6: VALIDATION ENHANCEMENT (10 points)

6.1: Email Validation (5 points)

Test Cases:

Email Input	Expected Result	
john@email.com	Valid, accepts	Passed
john.doe@company.co.uk	Valid, accepts	Passed
john@email	Invalid, rejects	Passed
johnemail.com	Invalid, rejects	
(empty)	Valid, accepts (optional field)	Passed

10	DA111	HA NGUYEN	john.doe@company.co.uk	CV	2025-11-17 21:49:54.0	 Edit  Delete
9	SV008	Nguyễn Trần Hoàng Hạ	john@email.com	Software Engineering	2025-11-17 21:48:55.0	 Edit  Delete

+ Add New Student

Student Code *

SV059

Full Name *

Nguyễn Trần Hoàng Hạ

Email

john@email

Major

CV

 Save Student

Cancel

+ Add New Student

Invalid email format

Student Code *

e.g., SV001

Full Name *

Enter full name

Email

student@email.com

Major

e.g., Computer Science

 Save Student

Cancel

+ Add New Student

Student Code *

DA118

Full Name *

Nguyen Tran Hoang Ha

Email

johnemail.com

Major

CV

Save Student Cancel

+ Add New Student

Student Code *

DA118

Full Name *

Nguyen Tran Hoang Ha

Email

johnemail.com

! Please include an '@' in the email address. 'johnemail.com' is missing an '@'.

CV

Save Student Cancel

ID	Student Code	Full Name	Email	Major	Created At	Actions
12	DA118	Nguyen Tran Hoang Ha		CV	2025-11-17 21:59:08.0	Edit Delete

6.2: Student Code Pattern Validation (5 points)

Examples: SV001, IT123, CS9999 (valid)

Examples: sv001, S001, SV12 (invalid)

Student Code *

sv001

Full Name *

Nguyen Tran Hoang Ha

Email

student@email.com

Major

e.g., Computer Science



Save Student

Cancel

Student Code *

S001

Full Name *

HA NGUYEN

Student Code *

SV12

Full Name *

Ha

+ Add New Student

Invalid student code format (e.g., SV001, IT123)

Student Code *

Full Name *

Enter full name

Email

student@email.com

Major

e.g., Computer Science























Save Student

Cancel

EXERCISE 7: USER EXPERIENCE IMPROVEMENTS (15 points)

7.1: Pagination (8 points)

Add pagination to display 10 students per page.

ID	Student Code	Full Name	Email	Major	Created At	Actions
30	SV099	HA NGUYEN			2025-11-17 22:52:54.0	 Edit  Delete
29	SV080	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:45.0	 Edit  Delete
28	SV089	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:37.0	 Edit  Delete
27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	 Edit  Delete
26	SV110	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:08.0	 Edit  Delete
25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	 Edit  Delete
24	SV008	Nguyen Tran Hoang Ha			2025-11-17 22:51:57.0	 Edit  Delete
23	SV002	Nguyen Tran Hoang Ha			2025-11-17 22:51:50.0	 Edit  Delete
22	SV001	Nguyễn Trần Hoàng Hạ			2025-11-17 22:51:42.0	 Edit  Delete
21	SV003	Nguyễn Trần Hoàng Hạ			2025-11-17 22:51:32.0	 Edit  Delete

1 2 Next

7.2: Improved UI/UX (7 points)

a) Success/Error Message Styling (2 points)

Student Management System

✓ Student added successfully

b) Loading States (2 points)

+ Add New Student

Student Code *

Full Name *

Email

Major

Processing...Cancel

c) Responsive Table (3 points)



Student Management System

SearchClear+ Add New Student

ID	Student Code	Full Name	Email	Major	Created At	Actions
39	SV118	Nguyễn Trần Hoàng Hạ			2025-11-17 23:11:45.0	Edit Delete
38	SV098	Nguyễn Trần Hoàng Hạ			2025-11-17 23:10:37.0	Edit Delete
35	SV191	HA NGUYEN			2025-11-17 23:07:29.0	Edit Delete
34	SV044	HA NGUYEN			2025-11-17 23:06:35.0	Edit Delete
33	SV051	Nguyễn Trần Hoàng Hạ			2025-11-17 23:06:15.0	Edit Delete
31	DA111	HA NGUYEN			2025-11-17 23:05:55.0	Edit Delete
30	SV099	HA NGUYEN			2025-11-17 22:52:54.0	Edit Delete
29	SV080	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:45.0	Edit Delete
28	SV089	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:37.0	Edit Delete
27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	Edit Delete

1 2 Next

BONUS EXERCISES

BONUS 1: Export to CSV (5 points)

+ Add New Student
Export to CSV

ID	Student Code	Full Name	Email	Major	Created At	Actions
45	DA141	Nguyễn Trần Hoàng Hạ	nguyentranhoangha03@gmail.com		2025-11-17 23:24:43.0	Edit Delete
44	SV111	ha	nthha.iuswt@gmail.com		2025-11-17 23:24:14.0	Edit Delete
43	SV980	HA NGUYEN	nguyentranhoangha03@gmail.com		2025-11-17 23:19:29.0	Edit Delete
42	SV096	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com		2025-11-17 23:18:30.0	Edit Delete
41	SV022	Nguyen Tran Hoang Ha	nguyentranhoangha03@gmail.com		2025-11-17 23:16:58.0	Edit Delete
39	SV118	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com		2025-11-17 23:11:45.0	Edit Delete
38	SV098	Nguyễn Trần Hoàng Hạ	nguyentranhoangha03@gmail.com		2025-11-17 23:10:37.0	Edit Delete
35	SV191	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:07:29.0	Edit Delete
34	SV044	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:06:35.0	Edit Delete
33	SV051	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com		2025-11-17 23:06:15.0	Edit Delete

ID	Student Code	Full Name	Email	Major
33	SV051	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com	
34	SV044	HA NGUYEN	nthha.iuswt@gmail.com	
35	SV191	HA NGUYEN	nthha.iuswt@gmail.com	
38	SV098	Nguyễn Trần Hoàng Hạ	nguyentranhoangha03@gmail.com	
39	SV118	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com	
41	SV022	Nguyen Tran Hoang Ha	nguyentranhoangha03@gmail.com	
42	SV096	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com	
43	SV980	HA NGUYEN	nguyentranhoangha03@gmail.com	
44	SV111	ha	nthha.iuswt@gmail.com	IT
45	DA141	Nguyễn Trần Hoàng Hạ	nguyentranhoangha03@gmail.com	Software Engineering

BONUS 2: Sort by Column (5 points)


Add ability to sort table by clicking column headers.

Toggle ascending/descending

Requirements:

- Click "Full Name" header → sort alphabetically

Increasing





















 **Student Management System**

Search


Clear

+ Add New Student

Export to CSV

ID	Student Code	Full Name ▲	Email	Major	Created At	Actions
20	SV119	a			2025-11-17 22:51:22.0	 Edit  Delete
21	SV003	b			2025-11-17 22:51:32.0	 Edit  Delete
45	DA141	b	nguyentranhoangha03@gmail.com	Software Engineering	2025-11-17 23:24:43.0	 Edit  Delete
22	SV001	c			2025-11-17 22:51:42.0	 Edit  Delete
30	SV099	HA NGUYEN			2025-11-17 22:52:54.0	 Edit  Delete
31	DA111	HA NGUYEN			2025-11-17 23:05:55.0	 Edit  Delete
34	SV044	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:06:35.0	 Edit  Delete
35	SV191	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:07:29.0	 Edit  Delete
43	SV980	HA NGUYEN	nguyentranhoangha03@gmail.com		2025-11-17 23:19:29.0	 Edit  Delete
25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	 Edit  Delete

Decreasing



















 **Student Management System**

Search

Clear

+ Add New Student

Export to CSV

ID	Student Code	Full Name ▼	Email	Major	Created At	Actions
30	SV099	HA NGUYEN			2025-11-17 22:52:54.0	 Edit  Delete
31	DA111	HA NGUYEN			2025-11-17 23:05:55.0	 Edit  Delete
34	SV044	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:06:35.0	 Edit  Delete
35	SV191	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:07:29.0	 Edit  Delete
43	SV980	HA NGUYEN	nguyentranhoangha03@gmail.com		2025-11-17 23:19:29.0	 Edit  Delete
22	SV001	c			2025-11-17 22:51:42.0	 Edit  Delete
21	SV003	b			2025-11-17 22:51:32.0	 Edit  Delete
45	DA141	b	nguyentranhoangha03@gmail.com	Software Engineering	2025-11-17 23:24:43.0	 Edit  Delete
20	SV119	a			2025-11-17 22:51:22.0	 Edit  Delete

[Previous](#) [1](#) [2](#)

- Click "Created At" → sort by date

Increasing

Student Management System





















Search by name or code...

Search


Clear

+ Add New Student

Export to CSV

ID	Student Code	Full Name	Email	Major	Created At ▲	Actions
20	SV119	a			2025-11-17 22:51:22.0	 Edit  Delete
21	SV003	b			2025-11-17 22:51:32.0	 Edit  Delete
22	SV001	c			2025-11-17 22:51:42.0	 Edit  Delete
23	SV002	Nguyen Tran Hoang Ha			2025-11-17 22:51:50.0	 Edit  Delete
24	SV008	Nguyen Tran Hoang Ha			2025-11-17 22:51:57.0	 Edit  Delete
25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	 Edit  Delete
26	SV110	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:08.0	 Edit  Delete
27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	 Edit  Delete
28	SV089	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:37.0	 Edit  Delete
29	SV080	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:45.0	 Edit  Delete

Decreasing





















Student Management System

Search

Clear

+ Add New Student

Export to CSV


ID	Student Code	Full Name	Email	Major	Created At ▼	Actions
45	DA141	b	nguyentranhoangha03@gmail.com	Software Engineering	2025-11-17 23:24:43.0	 Edit  Delete
43	SV980	HA NGUYEN	nguyentranhoangha03@gmail.com		2025-11-17 23:19:29.0	 Edit  Delete
42	SV096	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com		2025-11-17 23:18:30.0	 Edit  Delete
41	SV022	Nguyen Tran Hoang Ha	nguyentranhoangha03@gmail.com		2025-11-17 23:16:58.0	 Edit  Delete
39	SV118	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com		2025-11-17 23:11:45.0	 Edit  Delete
38	SV098	Nguyễn Trần Hoàng Hạ	nguyentranhoangha03@gmail.com		2025-11-17 23:10:37.0	 Edit  Delete
35	SV191	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:07:29.0	 Edit  Delete
34	SV044	HA NGUYEN	nthha.iuswt@gmail.com		2025-11-17 23:06:35.0	 Edit  Delete
33	SV051	Nguyễn Trần Hoàng Hạ	nthha.iuswt@gmail.com		2025-11-17 23:06:15.0	 Edit  Delete
31	DA111	HA NGUYEN			2025-11-17 23:05:55.0	Edit Delete

BONUS 3: Bulk Delete (5 points)

Add checkboxes to select multiple students and delete them at once.

Requirements:


- Checkbox for each student row

 **Student Management System**

<input type="checkbox"/>	ID ▼	Student Code	Full Name	Email	Major	Created At	Actions
<input type="checkbox"/>	48	SV115	Chi			2025-11-22 11:15:15.0	Edit Delete
<input type="checkbox"/>	47	SV098	Dũng			2025-11-22 11:15:07.0	Edit Delete
<input type="checkbox"/>	46	SV015	Quỳnh			2025-11-22 11:14:48.0	Edit Delete
<input type="checkbox"/>	27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	Edit Delete
<input type="checkbox"/>	26	SV110	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:08.0	Edit Delete
<input type="checkbox"/>	25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	Edit Delete
<input type="checkbox"/>	22	SV001	c			2025-11-17 22:51:42.0	Edit Delete
<input type="checkbox"/>	21	SV003	b			2025-11-17 22:51:32.0	Edit Delete
<input type="checkbox"/>	20	SV119	a			2025-11-17 22:51:22.0	Edit Delete

1

- "Select All" checkbox

 **Student Management System**

<input checked="" type="checkbox"/>	ID ▼	Student Code	Full Name	Email	Major	Created At	Actions
<input checked="" type="checkbox"/>	48	SV115	Chi			2025-11-22 11:15:15.0	Edit Delete
<input checked="" type="checkbox"/>	47	SV098	Dũng			2025-11-22 11:15:07.0	Edit Delete
<input checked="" type="checkbox"/>	46	SV015	Quỳnh			2025-11-22 11:14:48.0	Edit Delete
<input checked="" type="checkbox"/>	27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	Edit Delete
<input checked="" type="checkbox"/>	26	SV110	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:08.0	Edit Delete
<input checked="" type="checkbox"/>	25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	Edit Delete
<input checked="" type="checkbox"/>	22	SV001	c			2025-11-17 22:51:42.0	Edit Delete
<input checked="" type="checkbox"/>	21	SV003	b			2025-11-17 22:51:32.0	Edit Delete
<input checked="" type="checkbox"/>	20	SV119	a			2025-11-17 22:51:22.0	Edit Delete

1

- "Delete Selected" button

- Confirmation before bulk delete

localhost:8080/StudentManagement/list_students.jsp

Student Management System

Search by name or code...

localhost:8080 says
Are you sure to delete selected students?

	ID ▼	Student Code	Full Name	Email	Major	Created At	Actions
<input checked="" type="checkbox"/>	48	SV115	Chi			2025-11-22 11:15:15.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input checked="" type="checkbox"/>	47	SV098	Dũng			2025-11-22 11:15:07.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input checked="" type="checkbox"/>	46	SV015	Quỳnh			2025-11-22 11:14:48.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	26	SV110	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:08.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	22	SV001	c			2025-11-17 22:51:42.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	21	SV003	b			2025-11-17 22:51:32.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	20	SV119	a			2025-11-17 22:51:22.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

1

* Delete few students

localhost:8080/StudentManagement/list_students.jsp?message=3%20students%20deleted

Student Management System

✓ 3 students deleted

Search by name or code...

	ID ▼	Student Code	Full Name	Email	Major	Created At	Actions
<input type="checkbox"/>	27	SV011	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:29.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	26	SV110	Nguyễn Trần Hoàng Hạ			2025-11-17 22:52:08.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	25	SV009	Nguyen Tran Hoang Ha			2025-11-17 22:52:03.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	22	SV001	c			2025-11-17 22:51:42.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	21	SV003	b			2025-11-17 22:51:32.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="checkbox"/>	20	SV119	a			2025-11-17 22:51:22.0	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

1

* Delete all the students

Student Management System

✓ 6 students deleted

Search by name or code...

Search

Clear

+ Add New Student

Export to CSV

Delete Selected

■	ID ▼	Student Code	Full Name	Email	Major	Created At	Actions
---	------	--------------	-----------	-------	-------	------------	---------