Testing, Projects

Workshop 5

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Week	Date	Lecture Monday 11:00-12:00 *PHYS BLDG G44 FRANK*	Workshop Monday 13:00-15:00 *MVB 2.11 PC*	Groupwork
1	23/01/22	Introduction and Process [slides] [materials]	Teams, Waterfall Method and Project Brief [slides] [case study] [project brief]	Research games, create list on team repo. Install Processing
2	30/01/22	Agile Software Development [slides]	Intro to Processing, Agile Techniques [slides]	Decide on two game ideas
3	06/02/22	Requirements Engineering	Paper Prototyping, Requirements, Ideas Clinic	Collect requirements. Decide on final idea
4	13/02/22	Object Orientated Design	Classes Activity	Add requirements section to report
5	20/02/22	Implementation	Case Study, Sprint Prep, Continuous Integration	Develop a working prototype over reading week!
6	28/02/22	READING WEEK	GAMES JAM	
7	06/03/22	Project Management	IN CLASS TEST (assessing lectures 1-4)	Define team roles
8	13/03/22	HCI - Qualitative	HCI Qualitative Task	Add qualitative assessment (of your choice) to report
9	20/03/22	HCI - Quantitative	HCI Quantitative Task	Add quantitative assessment (of your choice) to report
	27/03/22	EASTER week 1	SPRINT 1	
	03/04/22	EASTER week 2	SPRINT 2	
	10/04/22	EASTER week 3	SPRINT 3	
10	17/04/22	Software Engineering Extended	IN CLASS TEST (assessing lectures 5-9)	Develop Game
11	24/04/22	Coursework Feedback		Finish Report
12	01/05/22	Bank Holiday Monday (no class)	Demo Day Weds/Thurs (tbc)	Submit Report

Today's Workshop

- Testing (50 mins)

- Mock Test (15 mins)

- Game Jam Prep (15 mins)

- Summer Project (15 mins)

- Homework. Your team should now have one game idea. Develop a working prototype *(MVP) over reading week!

Testing

To do

1. Apply Equivalence Partitioning to define tests for Triangle Problem

2. Apply Equivalence Partitioning to define tests for UK Tax Allowance Calculator

Testing Triangle Problem

Triangle Problem

Given a triple of positive integer values (that is 3 integers greater than zero), the program determines whether they could represent the side that form a triangle. If they can, it classifies the triangle a scalene (sides of different length), isosceles (two equal sides) or equilateral (three equal sides). If the triples contain negative or zero values, print an error message.

- **To do:**

    - Derive tests for black box testing (use equivalence partitioning)

    - *Hint: the sides are not independent inputs, use triples*

E.g.: Triangle Problem: sides a, b, c

Partition	Description	Values
A	Negative or zero integer for a side	(a≤0 ∧ 0<b ∧ 0<c) OR (b≤0 ∧ 0<a ∧ 0<c) OR (c≤0 ∧ 0<a ∧ 0<b)
B		...
...		...

Solution - Triangle Problem: sides a, b, c

Partition	Description	Values
A	Negative or zero integer for a side	$(a \leq 0 \wedge 0 < b \wedge 0 < c)$ OR $(b \leq 0 \wedge 0 < a \wedge 0 < c)$ OR $(c \leq 0 \wedge 0 < a \wedge 0 < b)$
B	Not a valid triangle	$(a \geq b + c)$ OR $(b \geq a + c)$ OR $(c \geq a + b)$
C	Scalene Triangle	Not (A Or B) AND $[(a \neq b)$ AND $(b \neq c)$ AND $(a \neq c)]$
D	Isosceles Triangle	Not (A Or B) AND $[(a = b)$ xOR $(b = c)$ xOR $(a = c)]$
E	Equilateral Triangle	Not (A Or B) AND $[(a = b)$ AND $(b = c)$ AND $(a = c)]$
F	Non integers for a side	(a OR b OR c) are (alphabetic OR double)

Testing a UK Tax Allowance Calculator

https://www.gov.uk/income-tax-rates/current-rates-and-allowances

Current rates and allowances

How much Income Tax you pay in each tax year depends on:

- how much of your income is above your Personal Allowance
- how much of your income falls within each tax band

Some income is tax-free.

The current tax year is from 6 April 2022 to 5 April 2023.

> This guide is also available in Welsh (Cymraeg).

Your tax-free Personal Allowance

The standard Personal Allowance is £12,570, which is the amount of income you do not have to pay tax on.

Your Personal Allowance may be bigger if you claim Marriage Allowance or Blind Person's Allowance. It's smaller if your income is over £100,000.

Income Tax rates and bands

The table shows the tax rates you pay in each band if you have a standard Personal Allowance of £12,570.

> Income tax bands are different if you live in Scotland.

Band	Taxable income	Tax rate
Personal Allowance	Up to £12,570	0%
Basic rate	£12,571 to £50,270	20%
Higher rate	£50,271 to £150,000	40%
Additional rate	over £150,000	45%

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You can also see the rates and bands without the Personal Allowance. You do not get a Personal Allowance on taxable income over £125,140.

If you're employed or get a pension

Check your Income Tax to see:

- your Personal Allowance and tax code
- how much tax you've paid in the current tax year
- how much you're likely to pay for the rest of the year

Other allowances

You have tax-free allowances for:

- savings interest
- dividends, if you own shares in a company

You may also have tax-free allowances for:

- your first £1,000 of income from self-employment - this is your 'trading allowance'
- your first £1,000 of income from property you rent (unless you're using the Rent a Room Scheme)

Find out whether you're eligible for the trading and property allowances.

You pay tax on any interest, dividends or income over your allowances.

Paying less Income Tax

You may be able to claim Income Tax reliefs if you're eligible for them.

If you're married or in a civil partnership

You may be able to claim Marriage Allowance to reduce your partner's tax if your income is less than the standard Personal Allowance.

If you do not claim Marriage Allowance and you or your partner were born before 6 April 1935, you may be able to claim Married Couple's Allowance.

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E.g.: Possible Categories to start with

1. Use Equivalence Partitioning approach, follow the steps to come to a set of partitions, e.g.

Category	Description	Values
A	In Personal Allowance	pay $\leq$ 12,570
B	…	
…	…	

2. See what constraints there are between the categories

3. Start defining test cases

Solution - Possible Categories:

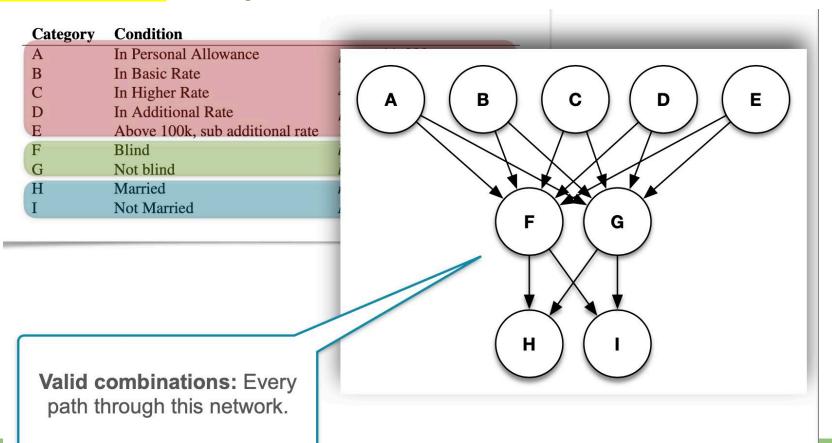| Category	Description	
A	In Personal Allowance	pay $\leq$ 12,570
B	In Basic Rate	12,570 < pay $\leq$ 50,271
C	In Higher Rate	50,271< pay $\leq$ 100,000
D	In Additional Rate	Pay > 150,000
E	Above 100k , sub additional rate	100,000 < pay $\leq$ 150,000
F	Blind	Blind = true
G	Not Blind	Blind = false
H	Married	Married = true
I	Not Married	Married=false

Solution - Generating Tests by Combining Categories:

Category	Condition
A	In Personal Allowance
B	In Basic Rate
C	In Higher Rate
D	In Additional Rate
E	Above 100k, sub additional rate
F	Blind
G	Not blind
H	Married
I	Not Married

Several categories cannot be combined with each other

Solution - Every Possible Combination:

Category	Condition
A	In Personal Allowance
B	In Basic Rate
C	In Higher Rate
D	In Additional Rate
E	Above 100k, sub additional rate
F	Blind
G	Not blind
H	Married
I	Not Married

Valid combinations: Every path through this network.

Mock Exam

Game Jam Prep

- Do you have **one clear idea** for a game?
- Is it either entirely novel or have a distinct **twist** on an existing game?
- Have you identified **three challenges**?
- Explain your idea to one of us over the next 15mins
- We will give you a thumbs up before you begin development with the games jam!

Summer Projects

Timeline

- Project list released in two weeks time: **Monday 6th March**

- 6 weeks before selection finalised

- Individual projects, contact supervisor directly, use form to confirm project

- Tuesday 7th – Project clinic with ILO
- Tuesday 14th – Group matching session
- Tuesday 21st – Group preference form

- Selection process finalized by end of Easter holidays: 14th April

- Project starts Monday 5th June
- Hand-in Tuesday 5th September
- Viva the week after

RESITS:.
- If you are doing any resits from TB1, sorry but you can't select a group as the risk is too high!
- With one resit in TB2, you may appeal to continue.

Individual Projects

- Work with an academic supervisor on a novel project

- Choose if you plan to do a PhD or go into academia

- It is up to you to contact supervisor and for them to agree they will supervisor you

- Can I choose my own project? Yes, you can approach a supervisor in an area you are interested in and they may be able to supervise you in a project you suggest.

- 100% on the project report (up to 50 pages body)

- Optional viva/demo for second marker

- Note: last year individual and group projects had a mean average grade that was less than 1% between each other

Group Projects

- You will be working with a client / industry partner

- Choose if you plan to go into software development.

- 5 people in a group, some groups of 4

- How do I choose a group? … How's your SoftEng team working out? This could be a good starting point. We will be running a group matching session on Tuesday 14th to help you out.

- **50% group report**, providing details of the project motivation, design, implementation and evaluation.
- **30% individual report,** providing descriptions of and reflections on the student's own contribution to the project and their personal view of the project, its outcomes and future work.
- **20% final group presentation**, showcasing and demonstrating the outcomes of the project, and involving contributions from all team members.

homework / groupwork

- Plan a game jam to take place of reading week.

- We don't mind if this is in person, or online, just make sure you set aside enough time!

- We want your team to produce a playable MVP by the end of reading week. Keep it simple, make sure it's playable!