Conway's Game of Life

Before

After

Each live cell with either one neighbour or no neighbours dies of solitude.

Each live cell with four or more neighbours dies of overcrowding.

Each live cell with either two neighbours or three neighbours survives.

Each dead cell with exactly three neighbours comes to life.

Other than a grid that begins empty, what configuration of cells would remain constant, with no cells dying or coming to life? The grids can be of any size.

How would you go about testing that an application that implements this works as required?

Aston University
BIRMINGHAM UK

Software Project Management

Exam Preparation

Thais Webber
Richard Lee

CS3SPM Exam Preparation

- Overview of exam structure and content
- Key advice and best practices
- Revision self-study guide materials
- SPM Q&A forum for exam preparation

CS3SPM Assessment 100% Exam

- Questions on theoretical and practical aspects of Software Project Management covered in lectures and tutorials
  - Concepts, problems and case studies like those addressed in tutorials

CS3SPM Assessment 100% Exam

- Questions on theoretical and practical aspects of Software Project Management covered in lectures and tutorials
  - Concepts, problems and case studies like those addressed in tutorials

- Main topics to focus
  - Introduction to Software Project Management
  - Planning software projects
  - Measurement and estimation in projects
  - Risk management in projects
  - Monitoring and control during projects' execution
  - Agile practice and methods

CS3SPM Assessment 100% Exam

- Preparation resources are available on Blackboard:
  - Lectures' Pdfs + Lectures' video recordings
  - Forums/Q&As per unit for sharing questions and discuss answers
  - Tutorials' pdfs: questions and answers provided

CS3SPM Assessment 100% Exam

- A summary on the exam paper structure and type questions and tips
- A guide for self-study and preparation for the exam to help you organise the content and yourself for the exam

CS3SPM 100% Closed-book Exam

- **Mandatory part (Section A)** – (30 marks)
  - Multiple choice questions only
  - General understanding of module topics / reviews all units
  - Students are required to answer all questions in this part

CS3SPM 100% Closed-book Exam

5) Which of the following options best describes a key difference between PRINCE2 and Step Wise planning?

a.		PRINCE2 allows overlapping phases, while Step Wise follows a strict, sequential order.
b.		PRINCE2 has defined stages and roles; Step Wise is more informal and ad-hoc.
c.		PRINCE2 includes stages like planning and control, while Step Wise moves linearly from feasibility to execution.
d.		PRINCE2 focuses on risk and quality control, while Step Wise covers the full lifecycle, including budgeting and stakeholders.

This one

(1 mark)

5th Jan — 16th Jan

CS3SPM 100% Closed-book Exam

4) Mark **one** 'X' in **each** row to indicate the most appropriate type of scale for the data examples provided. *Note that some scale types may be used multiple times, while others may not be used at all.*

(5 mark)

	Data examples	Ordinal	Ratio	Nominal	Interval
a.	Language in which an application was developed (e.g. Java, C++)			X	
b.	Development methodology adopted for a project (e.g. waterfall, incremental prototype)				
c.	Measure of difficulty when assessing a user interface feature (e.g. very easy, quite easy, quite difficult)				
d.	Probability of being awarded a contact (e.g. 0.25, 0.75)				
e.	Rating of programmer expertise (e.g. novice, experienced, expert)				

CS3SPM 100% Closed-book Exam

1) Which of the following are characteristics of a project but **not** characteristics of exploration? Mark **all** answers that apply.

(3 mark)

a.	X	Clearly-defined deliverable ✓ +1
b.		Open-ended deadline
c.		Ambiguous success criteria
d.	X	Individual with overall responsibility X -1
e.	X	Fixed budget ✓ +1
f.		Iterative testing without a final goal
g.	X	Specific time frame ✓ +1
h.		Flexible objectives

CS3SPM 100% Closed-book Exam

- **Choice-based part (Section B)** – (35 marks on each set of questions)
  - Comprising 3 sets of theoretical and practical questions, including some multiple choice (B.1, B.2, B.3)
  - Students are given the option to choose only two (2) out of these three (3) sets to answer
  - Each set of questions will focus on one main unit of the module, with additional questions from another unit included in the same section

Do the thing ⟶ evaluate it

CS3SPM Exam Rubric and Instructions

Date: TBC

Time: 9:30 or 14:00

Duration: 2 hours

5th – 16th Jan

Instructions to Candidates

1. Section A contains ONE question worth 30 marks. Answer the question in Section A.
2. Section B contains THREE questions worth 35 marks EACH. Answer TWO questions ONLY in Section B.
3. Use of calculators is allowed.

Calculators

Students should bring their own calculator, which must be from the
Casio FX-83,
Casio FX-85,
Casio 991,
HP10s or HP10s+ series

No other type of calculator is allowed

If you have any questions relating to this, please contact exams@aston.ac.uk

CS3SPM Exam Rubric and Instructions

Materials provided

- Formulas are provided at the end of the paper
- Answer booklet

Formulas

PERT technique

Activity expected time $t_e = (L + 4M + U) / 6$

Activity variance $v = ((U - L) / 6)^2$

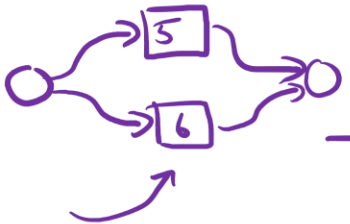
For a sequence/chain of activities:

$t_e = t_e(A1) + t_e(A2) + \ldots + t_e(An)$ and $v = v(A1) + v(A2) + \ldots v(An)$

For activities running concurrently:

$t_e = \max(t_e(A1), t_e(A2), \ldots, t_e(An))$ and $v = \max(v(A1), v(A2), \ldots, v(An))$

Given a target deadline T, the z value for an activity, a set of activities or an entire project is given by $z = (T - t_e) / \text{sqrt}(v)$, where t_e and v are the PERT expected time and variance respectively.



Measurement, estimation and data analysis

Effort = S x EpS

Effort = S / SpE

Cost = S x CpS

Cost = Effort x CpE

New Project Effort = Old Project Effort * (Rf1 * Rf2 * ...) + (Af1 + Af2 + ...)

Z-score table

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

3.142

-1.21

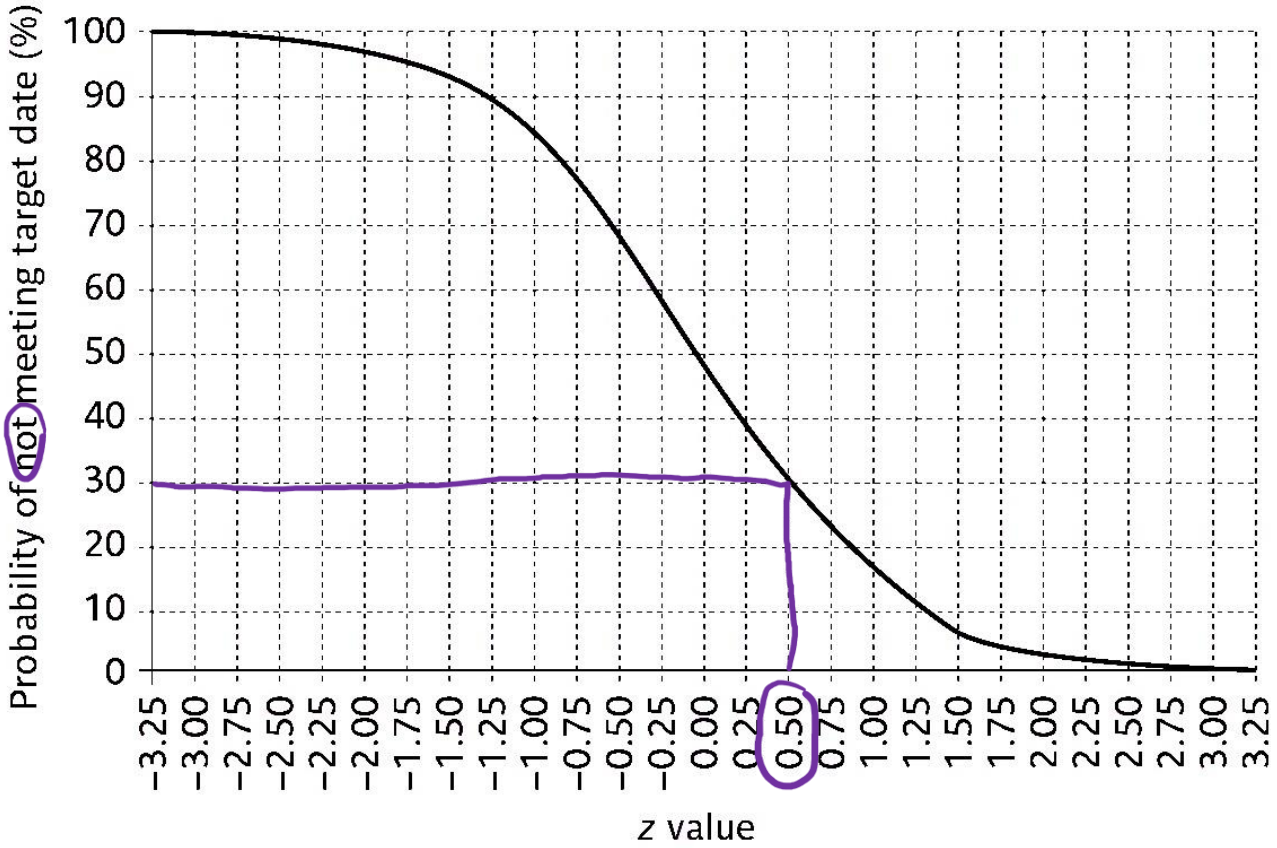
3.1 + .04

= 3.14

88.69%

99.92%

Z-score chart



Instructions

not

- READ the instructions in each question carefully
- Ensure that ALL questions (mandatory and choice-based) are answered without leaving any blanks
- Each question generally covers one unit as the main topic, potentially incorporating another unit as a secondary topic

Advice to answer questions

Multiple choice questions, some strategic tips that can be helpful:

- Preparation:
  - review key concepts and details from each unit, focusing on understanding rather than just memorisation
  - practice with sampled multiple-choice questions of your own or created by peers brainstorming or LLMs

Advice to answer questions

Multiple choice questions, some strategic tips that can be helpful:

During the exam:

- Read each question carefully: understand what is being asked, especially if the question involves "except," "not,“, “check all that apply”, “select one option”, etc.
- Narrow down your choices by eliminating options that are clearly incorrect
- Some questions might relate to practical aspects or techniques, use the exam stationery provided to draft and analyse possible correct answers

Advice to answer questions

Theoretical questions, some tips that can be helpful:

- Use bullet points (or a table if a comparison is required)
- DO NOT write long paragraphs with all the differences.
- Be concise!

Advice to answer questions

Theoretical questions, some tips that can be helpful:

- Use bullet points (or a table if a comparison is required)
- DO NOT write long paragraphs with all the differences.
- Be concise!

- Examples:
  DISCUSS the advantages and disadvantages of **TWO** agile methods.
  EXPLAIN WHY software project execution requires monitoring?
  DESCRIBE the limitations of measuring and/or estimating software size using SLOC.

Advice to answer questions

MARK the correct answer for the scenario and JUSTIFY your choice.

You are the project manager for a software development project that is currently running behind schedule. The initial project plan was to release a new software update to customers in three months, but due to unforeseen technical issues and resource constraints, the project is now expected to be delayed by at least one month.
Your team has proposed several options to get back on schedule.

A. Add more staff
B. Reduce features
C. Extend working hours
D. Delay the release

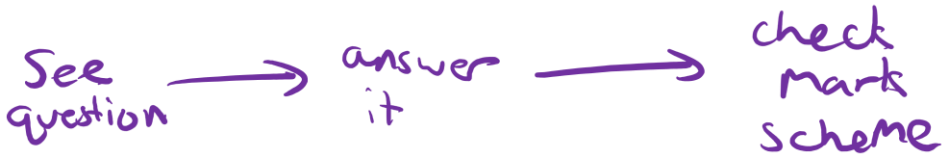
Question: Based on the scenario above, which option would you choose to bring the project back on schedule while minimising negative impacts? JUSTIFY your choice. (5 marks)

Advice to answer questions

Practical questions, some tips that can be helpful:

- Usually require to apply a technique or a reasoning approach covered in lectures, discussed during class, and further reinforced through examples and tutorial sessions

- Revisit examples, applications, in lectures and tutorial questions, as part of your exam preparation, and feel free to post any questions or comments in the Q&A forums!



Advice to answer questions

Practical questions, some tips that can be helpful:

- Estimation by analogy
- Some complex calculation to establish cost, SLOC, time
- Critical path analysis
- PERT analysis
- (etc.)

Look through lecture slides

Questions for your FYP (management)

Applying the concepts to your Final Year Project or to any project example

- DESCRIBE (SMART) objectives of your project. HOW they are SMART.
- HOW will you measure the success of the objectives?
- WHAT risks have you identified for your project, and HOW do you plan to mitigate them or minimise their impact?
- WHICH software development approach did you choose? WHAT are the key characteristics of the management approach you are implementing?
- WHAT artefacts are you using to manage your project, and HOW do they specifically support your FYP management and objectives?

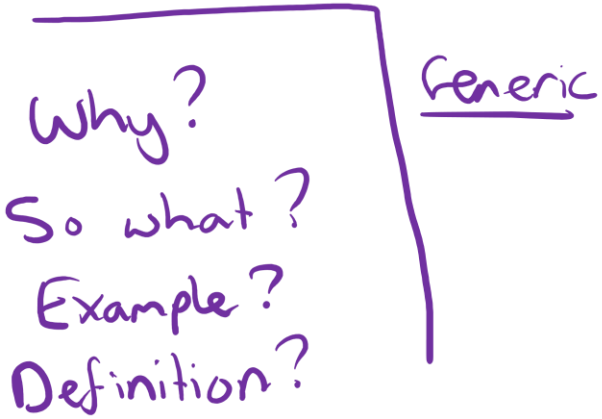
SMART objectives - examples

Objective: Develop a fully functional prototype of a mobile health app that accurately tracks and analyses user dietary habits, achieves at least 90% accuracy in identifying and logging food items from user inputs in controlled test scenarios, and incorporates feedback from at least 10 trial users to refine usability and functionality.

Objective: Develop and deploy a web-based interactive learning platform for high school students that supports at least three different science subjects, includes real-time feedback and automated grading systems for quizzes and assignments, and achieves a user engagement rate of over 70% as measured by average session durations and quiz completion rates.

Question on project planning

Suppose you have a project with a defined critical path. If the duration of one activity on this critical path is extended, what impact could this have on the project's overall timeline?



Question on risk management

In project risk management, why is it important to assess both the likelihood and the impact of potential risks?

Provide an example of how you might position an identified risk within a matrix based on these two factors and justify your analysis.

Note: revise concepts and risk mitigation strategies or planning you would apply for each identified risk; also check examples, tutorial exercises on this unit.

Questions on overall module content

Note: revise concepts and techniques of ALL core topics in the CS3SPM module;
This session provided a few discussions as starting points, do not forget to check other units content and tutorials.

This lecture session was intended to set your mindset to prepare for the exam, and to organise your studies presenting the exam preparation materials. It was not intended to provide a full revision of all topics of the module.
For that, any questions, please use the Q&A, e-mails, or even you can book instructors WASS meetings.
We are here to support your learning journey.

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Here's to 2026 being less of an unqualified disaster than 2025

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