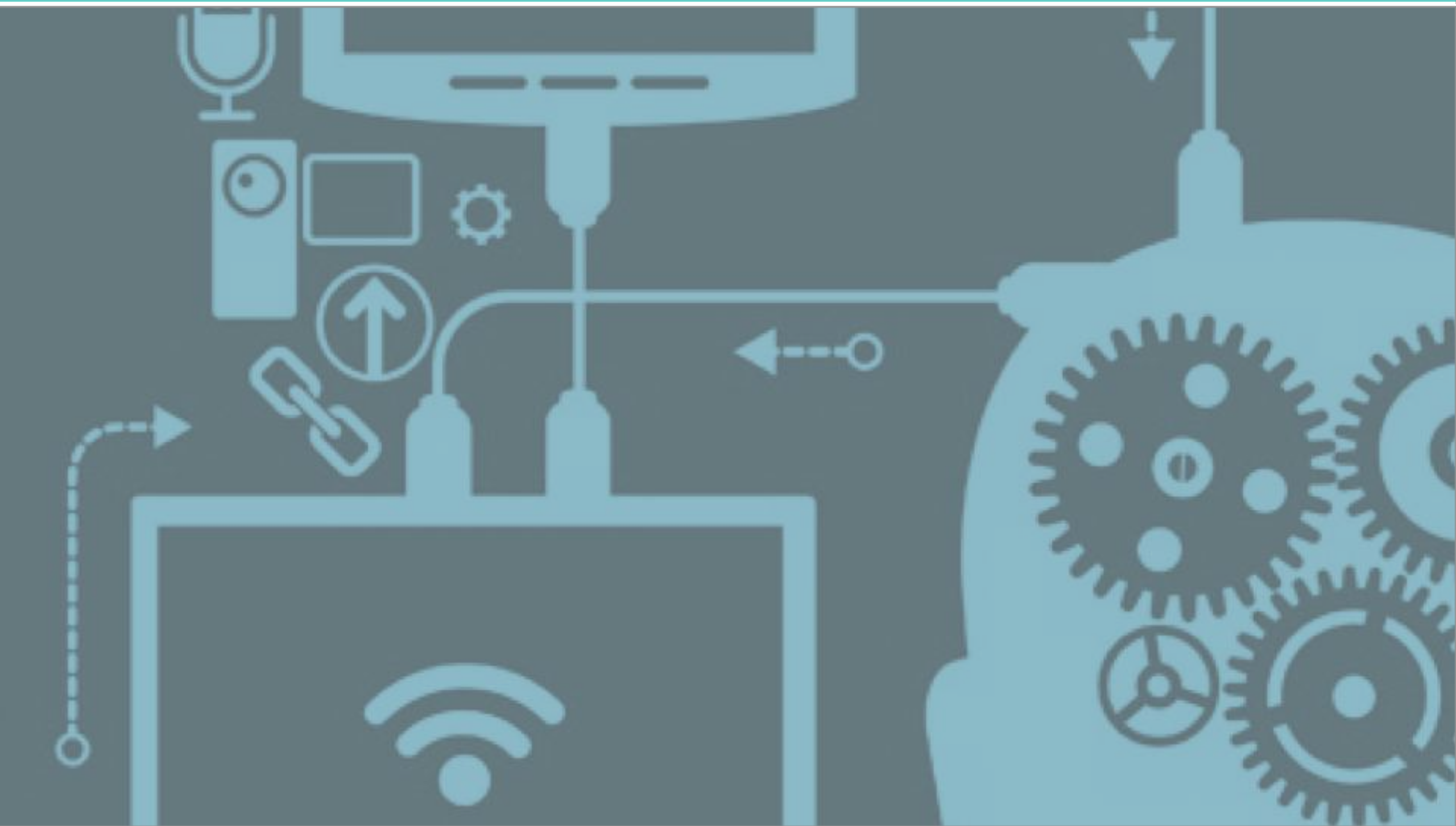
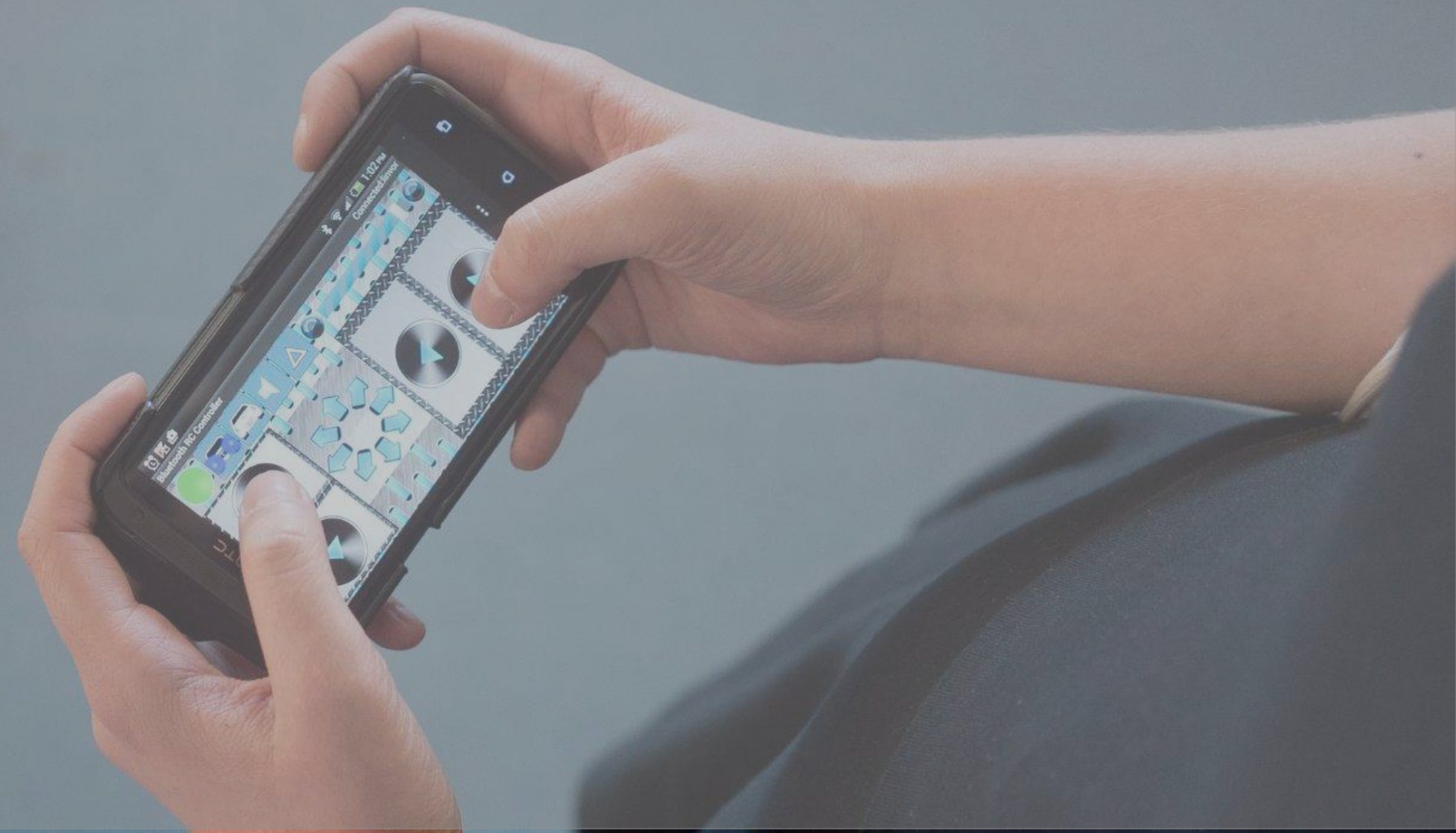


CN6000

Final Year Project 2025/26

Topic 6

Legal and Ethical Issues



Agenda

- Intellectual Property (IP)
- Copyright Law
- UEL Policy on IP
- Ethics
- Legal, social, & ethical issues in your Project
- Completing the 'Ethical Application form'.



What is Intellectual Property?

‘....refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

IP is protected in law by, for example, patents, copyright and trademarks ...’

(WIPO)

- Every project involves the creation of IP

IP and Computing Projects

Who owns the rights to your project when you have finally submitted it for assessment depends on your university!

Case 1

- Some institutions openly recognise that you have intellectual property rights over any work you produce as part of your course. The copyright for everything you produce thus belongs to you.
- This means that, while your institution requires copies of your work for assessment purposes, you would be able to sell patent and copyrights for your work as you wish.
- You would also be entitled, for example, to develop and sell any software that you had produced as part of your course.

IP and Computing Projects (cont.)

Case 2

- Other institutions will claim to own all or part of the rights to any student work produced during and as part of, an academic course.
- Q. Where does UEL stand on IP? Case 1 or 2?

UEL Policy on Intellectual Property

The following is an excerpt from the UEL Terms of Admittance:

- You are entitled to the **intellectual property** rights created during your time studying at UEL that would belong to you under the applicable law. There are some programmes where the assignment of certain types of intellectual property to UEL is appropriate. UEL will require the assignment to it of intellectual property rights relating to postgraduate research that is part of an ongoing research programme.

(Available online at <https://www.uel.ac.uk/discover/governance/policies-regulations-corporate-documents/student-policies>)

In conclusion, UEL will not, except in exceptional circumstances, assert its IP rights over your project but your employer's position may be very different.

IP and Computing Projects (cont.)

- Furthermore, where collaborative projects have been undertaken with **industry**, the company may retain ownership of anything you produce.
 - Does this apply to you?
- It can also be argued that your supervisor has some (perhaps a lot of) investment in your project. The supervisor may have suggested the project in the first place, and provided key advice and guidance during the course of the project. Thus, your supervisor is entitled to some of the ownership of your project too.

The Copyrights, Designs and Patents Act (1988)

The relevant legislation in the UK:

- To be eligible for copyright protection, the work in question must be original. That is, it must have been independently created by its author (e.g. computer programs).
- The work must be embodied in some tangible medium of expression. Copyright laws do not protect concepts and principles.
- Copyright expires at the end of the period of 70 years from the end of the calendar year in which the author dies.
 - If the work is computer-generated copyright expires at the end of the period of 50 years from the end of the calendar year in which the work was made.

The Copyrights, Designs and Patents Act (1988)

- If in doubt about the copyright protection of an item, refer to
 - Intellectual Property Office. Service and guidance. Available online at <https://www.gov.uk/intellectual-property/copyright>
 - UK Government. Copyright, Designs and Patents Act 1988. Available online at <http://www.legislation.gov.uk/ukpga/1988/48/contents>

Reflection 1:

- How do you feel about UEL IP policy? Is it fair?
- What about the use of AI, who owns that?

Ethics

- Ethics deals with the **moral principles** governing or influencing conduct. It is the branch of knowledge concerned with moral principles.

Q. What is the difference between **ethics** and **morals**?

Q. Who or what determines standards of ethical behaviour in the IT profession?

- Most institutions have procedures in place to assess, evaluate, monitor and control ethical issues when approving student projects and this includes UEL.

The BCS Code of Conduct



BCS, THE CHARTERED INSTITUTE FOR IT
CODE OF CONDUCT FOR BCS MEMBERS

- **Covers 4 key areas**
 - The public interest
 - Professional competence and integrity
 - Duty to the relevant authority
 - Duty to the profession

Ethics in Computer Science

Projects in computer science and information systems generally do not raise ethical issues.

However, if you plan to involve others in your project in any way (non-exhaustive list) e.g. by

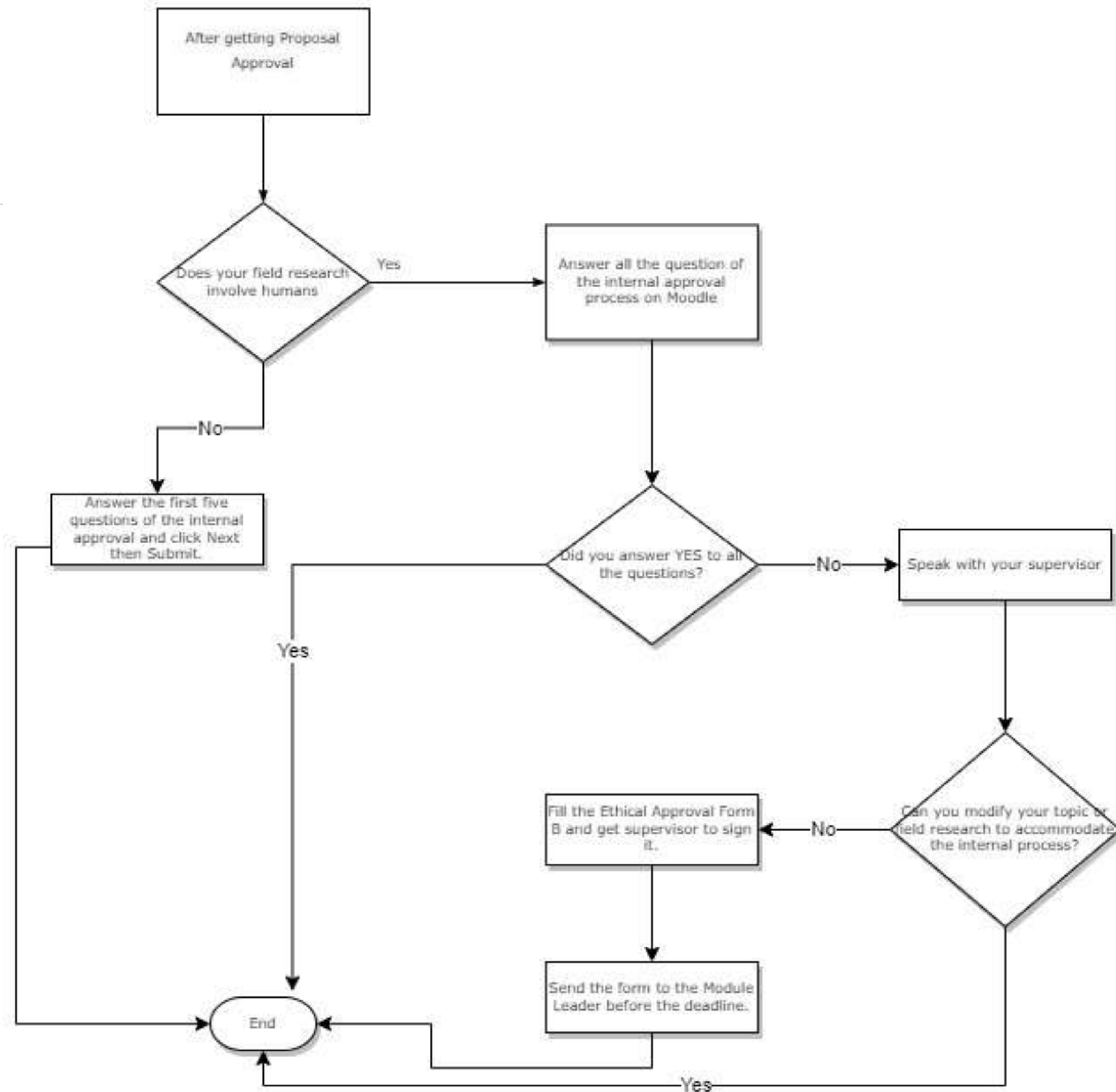
- Developing a system for a vulnerable group (requiring their interaction and feedback),
- Developing a database to store personal data or sensitive data,
- Working on systems of a potentially intrusive nature (unlikely)

You will need to obtain ethical approval.

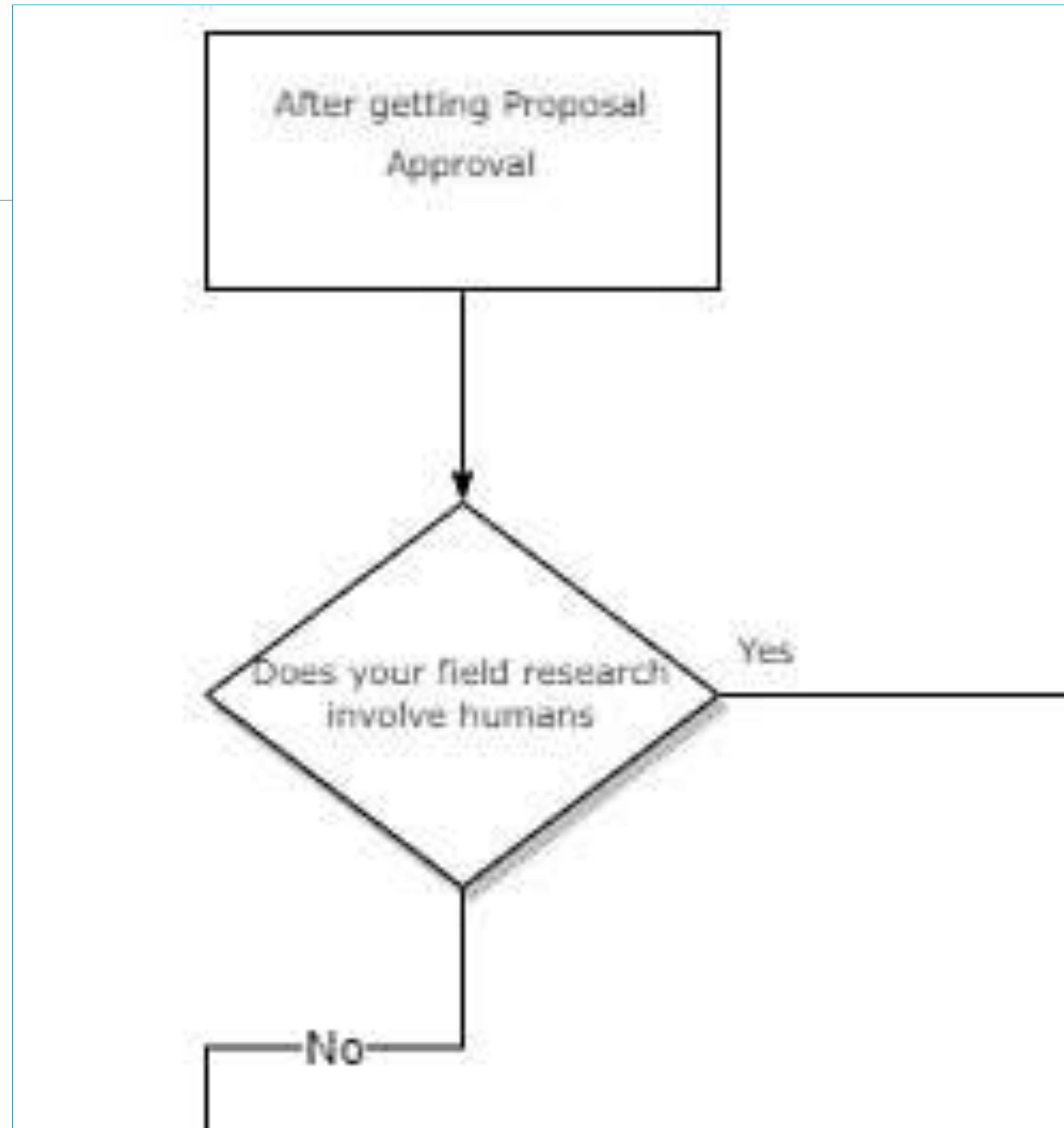
Ethical Approval

- No research involving human participants may occur until approval is granted one of **only two ways**:
 - Internally approved (Check conditions on Moodle page for CN6000).
 - by the Joint Research Ethics Committee
- The Committee **short form applications**:
 - Short form is intended for the approval of research activities that do not raise any significant ethical considerations or risks of the kind that require a **full application**.
 - **Short Form** is adequate for some but not all undergraduate projects

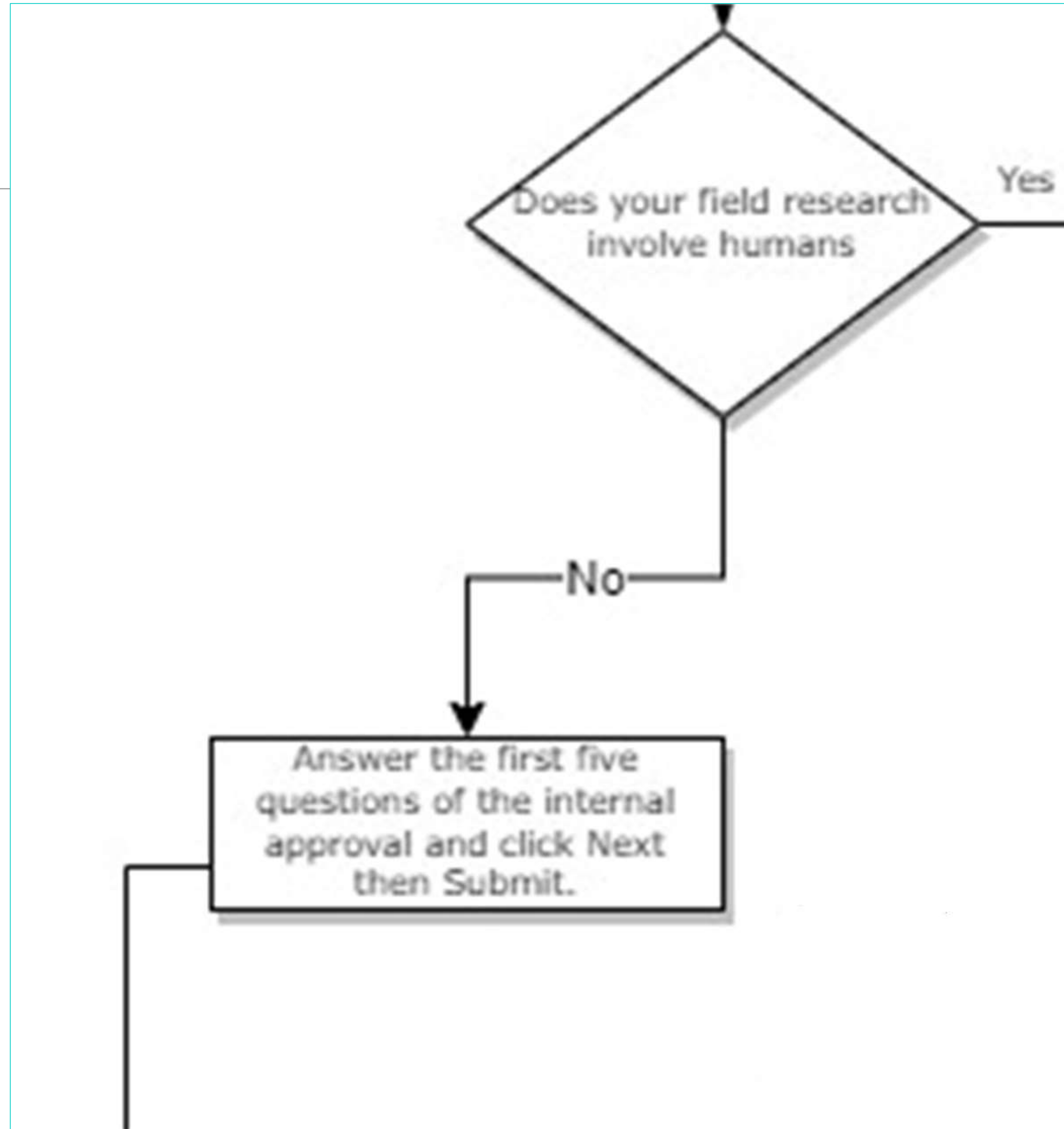
New Process:



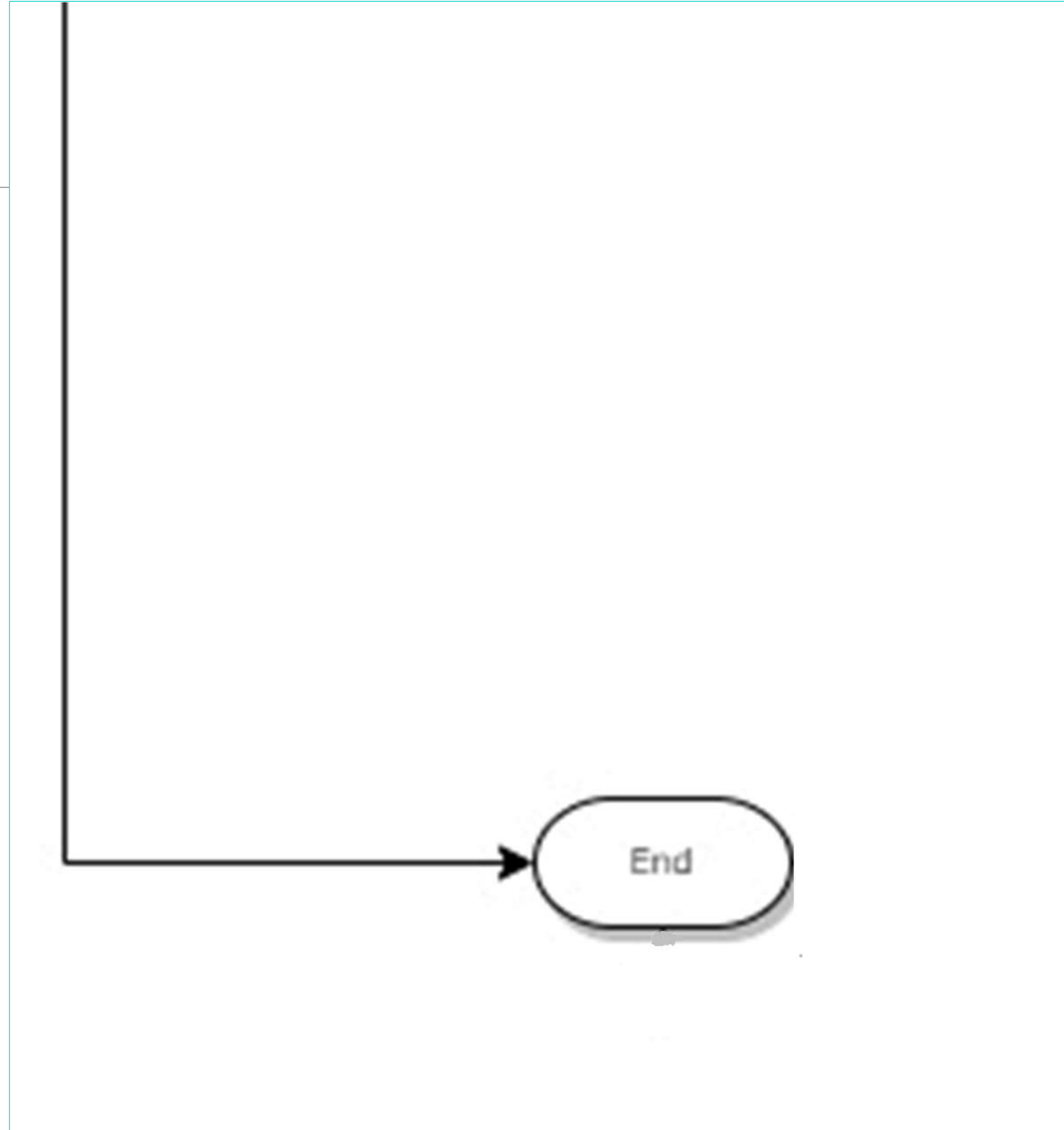
New Process:



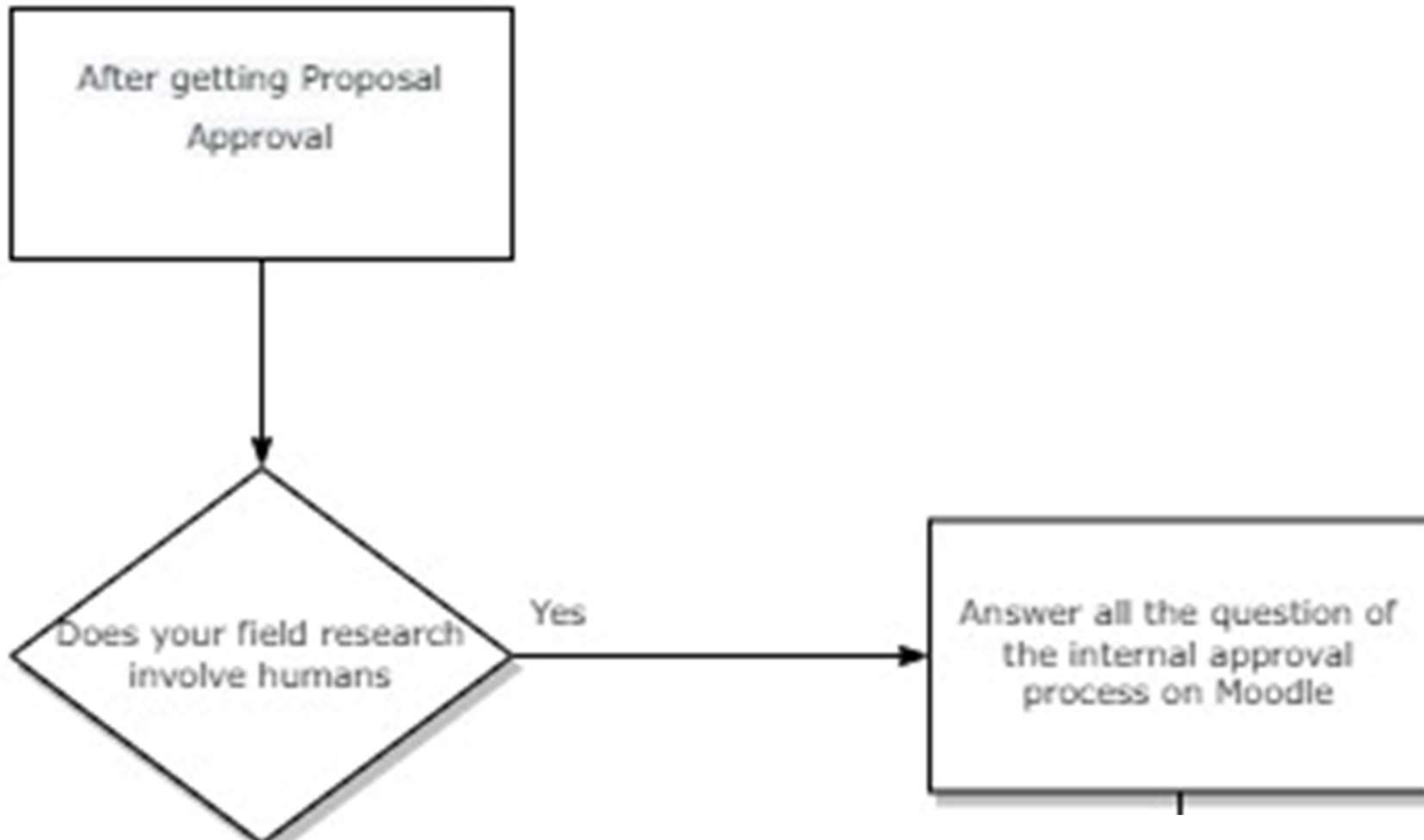
New Process:



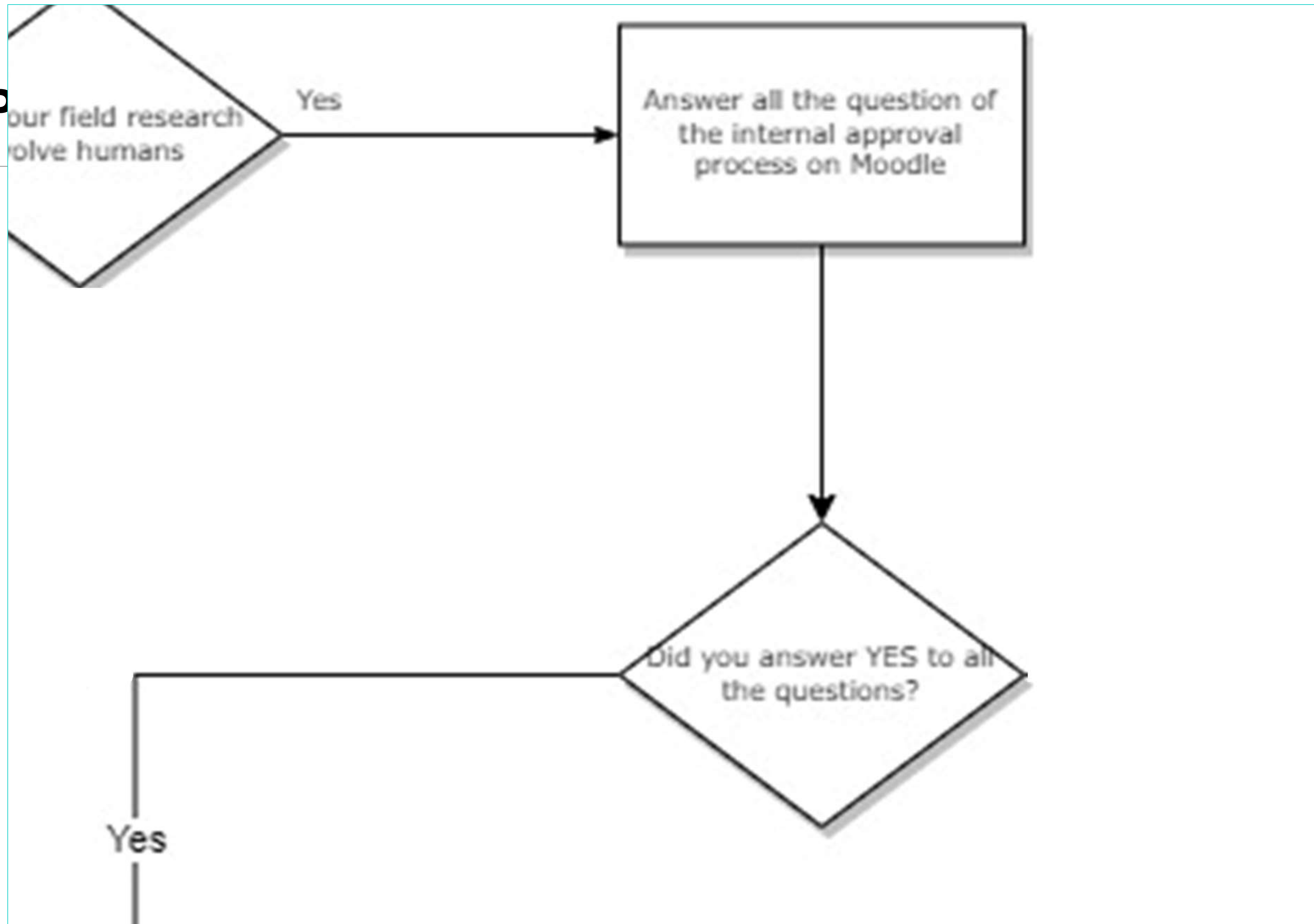
New Process:



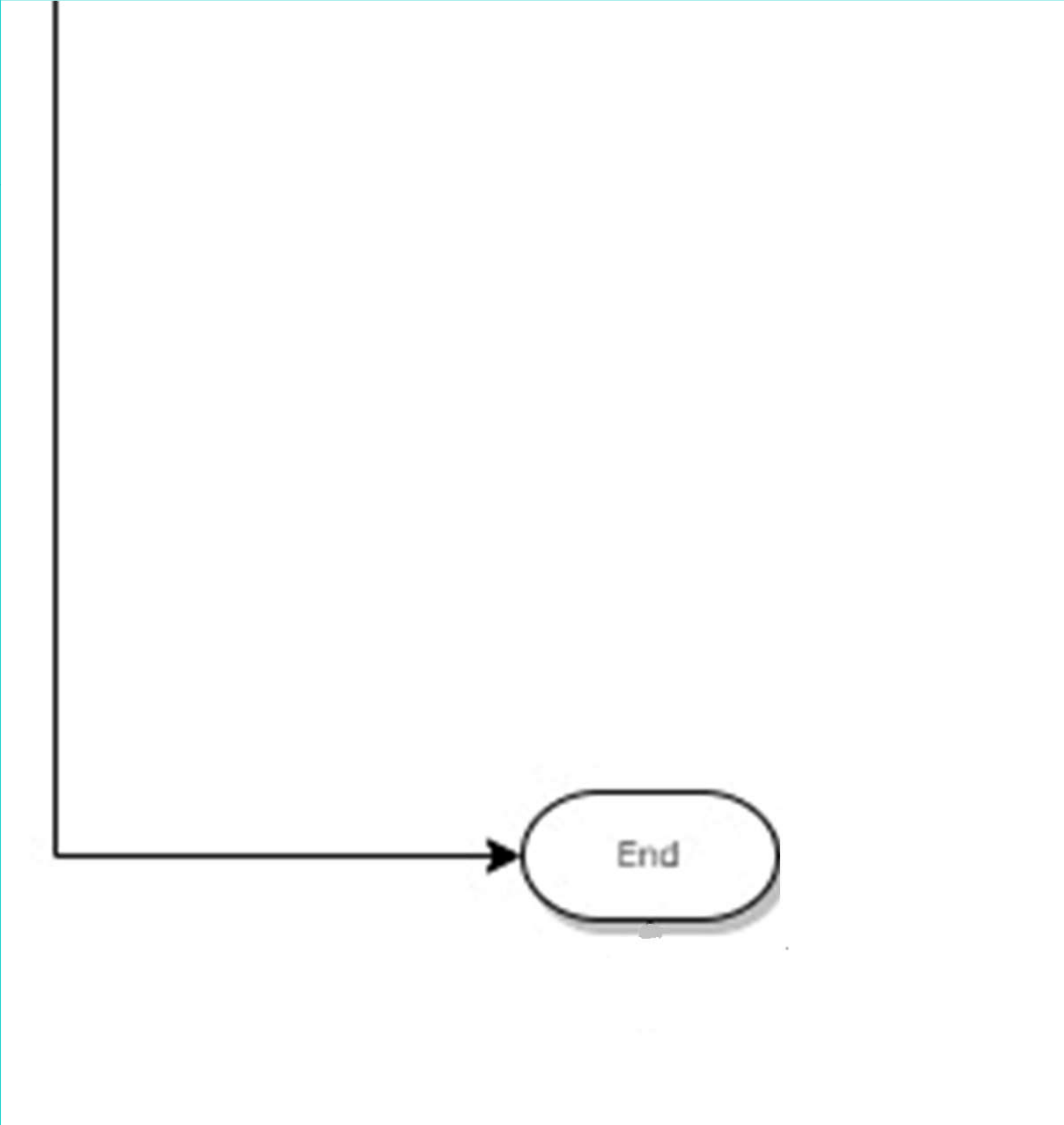
New Process



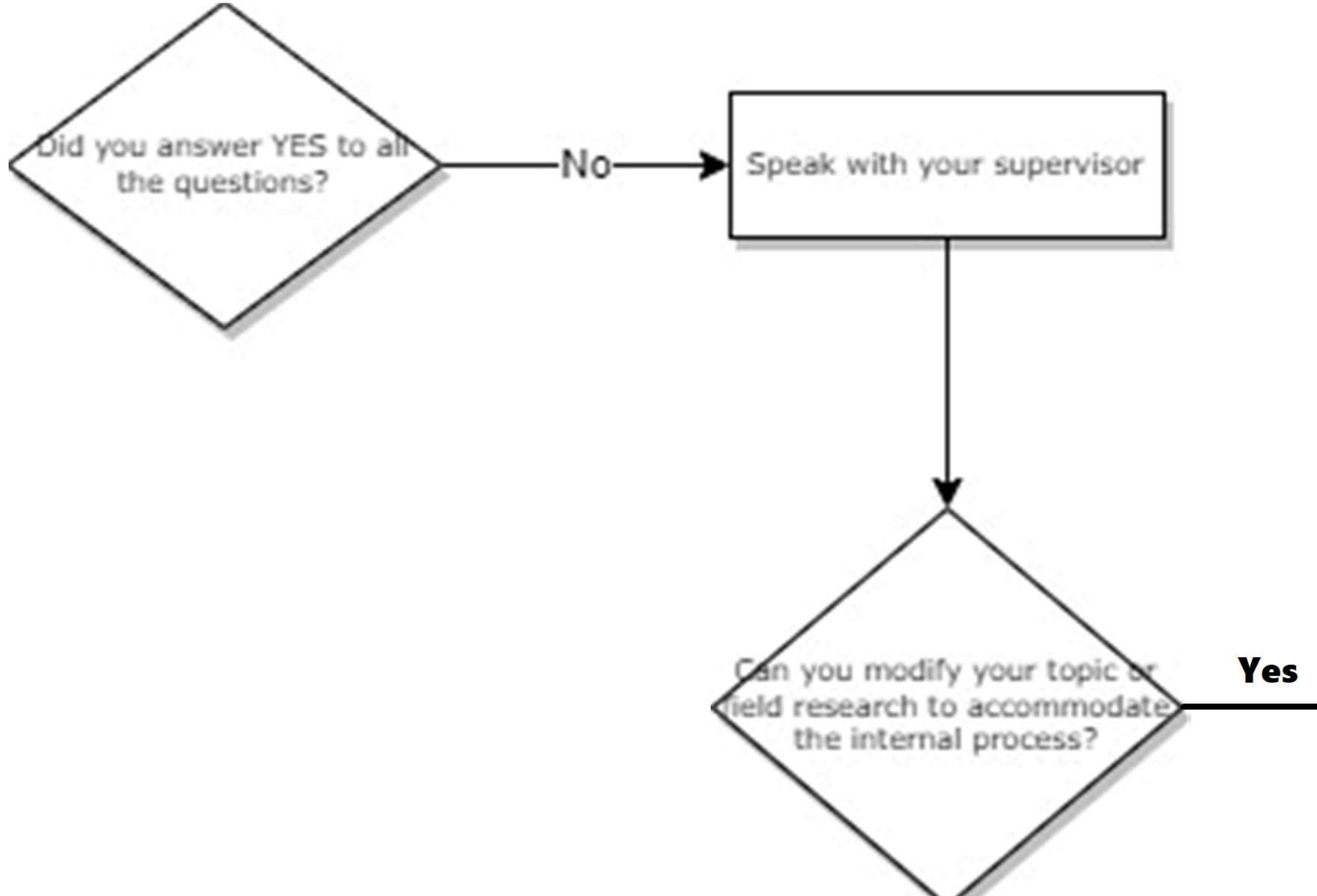
New P



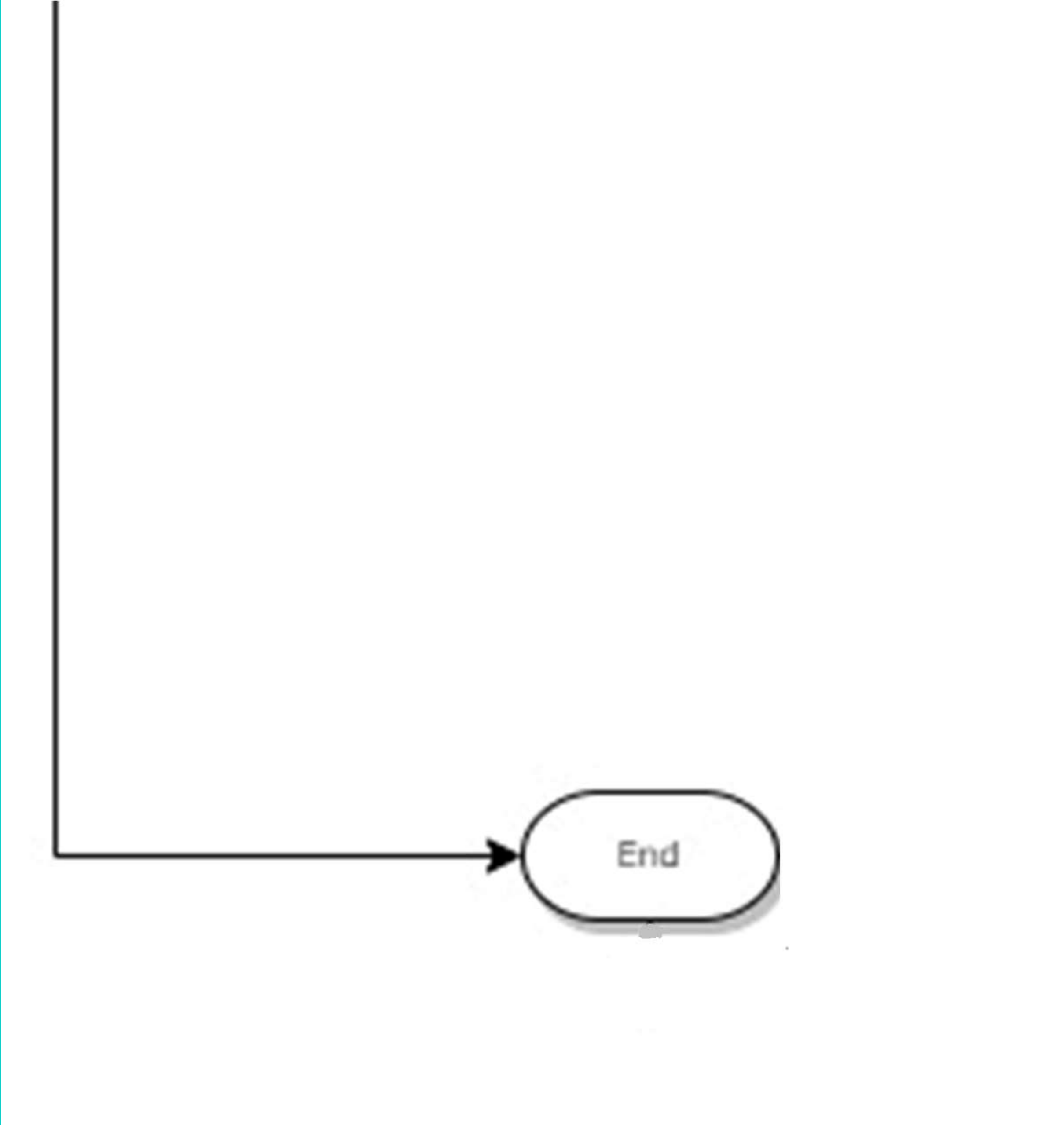
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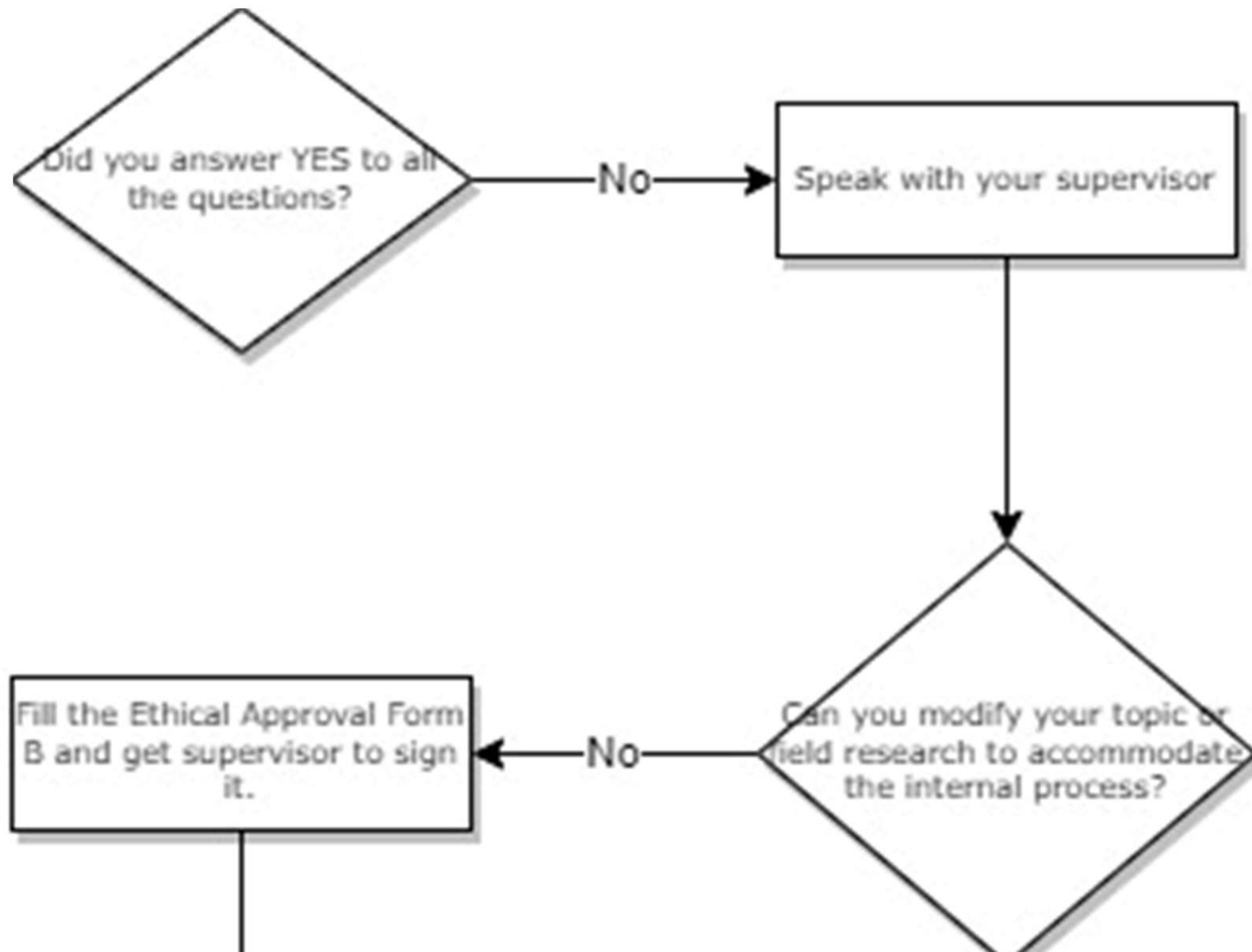
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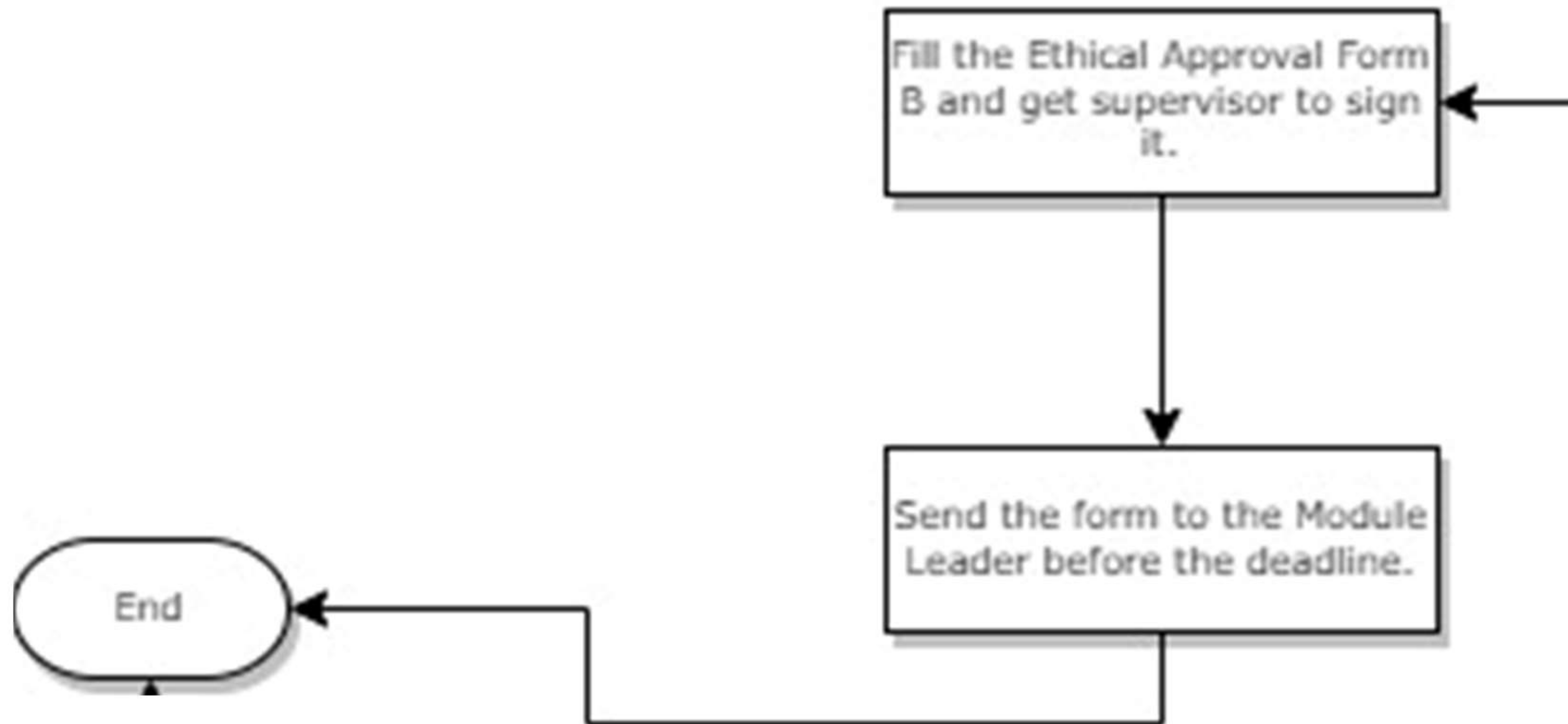
New Process:



New P



New Process:



Short Form:

- **Provide essential information about your dissertation.**

Provide a summary of your proposed research, including a description of the aims, methods and research participants (100 words)

Research topic: Community Interaction in Bermondsey

Aims: To determine if design interventions encourage community participation

Research methods: Design interventions such as chairs, coffee served in cups, chalk, and handcraft materials will be put in place on the site and community interaction will be documented through conversation, photographs and play. No identifying data will be collected. Photographs will be taken so that the faces of participants may NOT be identified.

Research participants: Members of local community over the age of 18.

This is their example, very generic and not the best!

Short Form:

- **Provide essential information about your dissertation.**

Provide a summary of your proposed research, including a description of the aims, methods and research participants (100 words)

Research topic: Development of a Health App for Newham

Aims: Implement a local health app system for the borough of Newham.

Research methods: To research current literature on the use of health apps and their impact, as well as current health facilities and activities in Newham. Apply qualitative data tools to identify themes and requirements using focus groups. Based on the feedback, I will design and implement a demo health app for Newham. I will test the app for functionality and report on accuracy. Finally, I will reflect on the outcomes and challenges and then suggest further development of the app. I will not be asking any sensitive questions or collecting personal data. All the interview data will be stored on UEL OneDrive, which is password-protected, and all these will be deleted upon completion of the dissertation. Thus, it complies with the GDPR of Data Protection Act 2018.

Research participants: Members of local community over the age of 18.

Where can you get all this from?

Short Form

Aim and Objectives:

- **Aim:** Implement a local health app system for the borough of Newham.

- **Objectives:**

- By the end of this project, I will be able:
 - To research current literature of use of health apps and their impact.
 - To conduct research of current health facilities and activities in Newham.
 - To use qualitative data tools to identify themes and requirements using focus groups.
 - To design and implement a demo health app for Newham.
 - To test the app for functionality and report on accuracy.
 - To reflect on the outcomes, challenges, and suggest further development of the app.

1. Theoretical Research
2. Field Research: Qualitative versus quantitative
3. Practical: application and testing
4. Reflection: Going forward

This is your research methodology. We just need to add few more things.

Short Form:

- **Provide essential information about your dissertation.**

Provide a summary of your proposed research, including a description of the aims, methods and research participants (100 words)

Research topic: Development of a Health App for Newham

Aims: Implement a local health app system for the borough of Newham.

Research methods: To research current literature on the use of health apps and their impact, as well as current health facilities and activities in Newham. Apply qualitative data tools to identify themes and requirements using focus groups. Based on the feedback, I will design and implement a demo health app for Newham. I will test the app for functionality and report on accuracy. Finally, I will reflect on the outcomes and challenges and then suggest further development of the app. **I will not be asking any sensitive questions or collecting personal data. All the interview data will be stored on UEL OneDrive, which is password-protected, and all these will be deleted upon completion of the dissertation. Thus, it complies with the GDPR of Data Protection Act 2018.**

Research participants: **Members of local community over the age of 18.**

Short Form:

- If you answer YES to questions 1 and 2 on Form and can answer NO to ALL of the remaining questions (see next slide) then you should complete this form without additional checks.

1. Does the research involve human participants? This includes surveys, questionnaires, interviews, observing behaviour. *If Yes, please answer questions 2-10*

Short Form:

- If you answer YES to questions 1 and 2 on Form and can answer NO to ALL of the remaining questions (see next slide) then you should complete this form without additional checks.

2. Will you ONLY interview professionals/practitioners about their work, or conduct surveys

without collecting personal data* under the following conditions?

SAFETY: The interview will take place in a safe, public or controlled environment

CONSENT: Interviews will be pre-arranged, and no one will take part without giving their informed consent in a written or recorded form.

DISCLOSURE: You will not carry out covert research, namely research that is deceptive or conducted without the knowledge of participants.

IDENTIFICATION: Any identification of the person in research outputs will only include such details as are necessary and agreed in writing by the participant.

DATA MANAGEMENT: All participant and interview data will be stored safely on password-protected computer files. Personal data will not be retained after the completion and assessment of the project.

* Survey data collection will ensure that individuals cannot be identified from the data collected. First names but not surnames may be collected where appropriate.

Form B:

- If you answer YES to any of questions 3-11 in form then you will be required to submit the full ethical application.

3. Will any of the participants be vulnerable? Note: vulnerable people include young people under 18, people with learning disabilities, people who may be limited by age or sickness or disability from understanding the research, etc.
4. Is there any form of invasive, intrusive or potentially harmful procedures of any kind? Note: Questioning adults on sensitive personal experiences may well be deemed potentially intrusive while interviewing professionals/practitioners about their work will usually not be considered intrusive.
5. Is there a foreseeable risk of physical harm or distress to any of the participants?
6. Will the study involve participants in prolonged or repetitive testing?
7. Is pain or more than mild discomfort likely to result from the study?
8. Will anyone be taking part without giving their informed consent?
9. Will the research output allow identification of any individual who has not given their express consent to be identified?
10. Will the research involve working with/within an organisation (e.g. school, business, etc.) where permission for access to conduct the research is required?
11. Does the research involve any other evident ethical issues that require consideration and approval by the College Research Ethics Committee?

Form B:

- If you answer YES to any of questions 3-11 in form then you will be required to submit the full ethical application.

3. Will any of the **participants be vulnerable?** Note: vulnerable people include young people under 18, people with learning disabilities, people who may be limited by age or sickness or disability from understanding the research, etc.

4. Is there any form of **invasive, intrusive or potentially harmful procedures of any kind?** Note: Questioning adults on sensitive personal experiences may well be deemed potentially intrusive while interviewing professionals/practitioners about their work will usually not be considered intrusive.

Form B:

- If you answer YES to any of questions 3-11 in form then you will be required to submit the full ethical application.

5. Is there a foreseeable **risk of physical harm or distress** to any of the participants?

6. Will the study involve participants in **prolonged or repetitive testing**?

7. Is **pain or more than mild discomfort** likely to result from the study?

Form B:

- If you answer YES to any of questions 3-11 in form then you will be required to submit the full ethical application.

8. Will anyone be taking part **without giving their informed consent?**

9. Will the research output allow **identification of any individual who has not given their express consent** to be identified?

Form B:

- If you answer YES to any of questions 3-11 in form then you will be required to submit the full ethical application.

10. Will the research involve working with/within an organisation (e.g. school, business, etc.) where **permission for access to conduct the research is required?**

11. Does the research involve **any other evident ethical issues** that require consideration and approval by the College Research Ethics Committee?

Few more points:

SAMPLE



University of
East London

Pioneering Futures Since 1898

Schools of Architecture, Computing and Engineering / Arts and Creative Industries 2021-22

Form B: Application for Interview/Survey Research Ethics Approval

This form is designed to assist undergraduate and taught postgraduate students who are interviewing adults for research projects in ways that DO NOT require a full research ethics application using Form A. If you answer YES to questions 1 and 2 below and NO to ALL of the remaining questions, then you should sign the form and submit it to your research supervisor/tutor for their approval and signature. If you answer YES to any of questions 3-11 you must submit an *Application for Research Ethics Approval* to the Joint Research Ethics Committee. Any research involving human subjects must be approved before being carried out.

Provide a summary of your proposed research including a description of the aims, methods and research participants (100 words)

Research topic: Remote learning vs in person learning

Aims: To determine if remote learning encourages knowledge exchange

Research methods: (How will participants be recruited? How will questionnaire be carried out? Will data be anonymised or pseudonymised? Where will data be stored? When will it be destroyed?)
Online questionnaires will be sent out through Forms to all students enrolled on module; data will be collated and anonymised through Forms. Data is stored on the shared drive and will be destroyed at the end of the module, on 1 June 2022.

Research participants: Students who are enrolled on a particular module will be sent a Form to complete on Teams asking whether or not they prefer online to in person learning.

Questions

1. Does the research involve human participants? This includes surveys, questionnaires, interviews, observing behaviour. If Yes, please answer questions 2-10

2. Will you ONLY interview professionals/practitioners about their work, or conduct surveys without collecting personal data* under the following conditions?
SAFETY. The interview will take place in a safe, public or controlled environment
CONSENT. Interviews will be pre-arranged and no one will take part without giving their informed consent in a written or recorded form.
DISCLOSURE. You will not carry out covert research, namely research that is deceptive or conducted without the knowledge of participants.
IDENTIFICATION. Any identification of the person in research outputs will only include such details as are necessary and agreed in writing by the participant.
DATA MANAGEMENT. All participant and interview data will be stored safely on password-protected computer files. Personal data will not be retained after the completion and assessment of the project.
* Survey data collection will ensure that individuals cannot be identified from the data collected. First names but not surnames may be collected where appropriate.

3. Will any of the participants be vulnerable? Note: vulnerable people include young people under 18, people with learning disabilities, people who may be limited by age or sickness or disability from understanding the research, etc.

4. Is there any form of invasive, intrusive or potentially harmful procedures of any kind? Note: Questioning adults on sensitive personal experiences may well be deemed potentially intrusive while interviewing professionals/practitioners about their work will usually not be considered intrusive.

5. Is there a foreseeable risk of physical harm or distress to any of the participants?

6. Will the study involve participants in prolonged or repetitive testing?

7. Is pain or more than mild discomfort likely to result from the study?

8. Will anyone be taking part without giving their informed consent?

9. Will the research output allow identification of any individual who has not given their express consent to be identified?

10. Will the research involve working with/within an organisation (e.g. school, business, etc.) where permission for access to conduct the research is required?

YES/NO

Yes

Yes

No

No

No

No

No

No

No

SAMPLE



University of
East London

Pioneering Futures Since 1898

11. Does the research involve any other evident ethical issues that require consideration and approval by the College Research Ethics Committee?

No

Student Name _____ Student Number _____ Date _____

Student Signature _____

Supervisor Name _____ Supervisor Signature _____ Date _____

Supervisor's signature

You must sign it!!

Pioneering Futures Since 1898

Ethical Form Templates:

- Found on Moodle under the submission section (6) or Template section (T.4)



6. Submit your Ethical Approval Form

Opened: Saturday, 4 November 2023, 9:26 AM
Due: Tuesday, 21 November 2023, 11:59 PM

Please make sure it has been reviewed by the supervisor before you submit it. Only submit here if you do not qualify for the internal approval process found under lesson 7 and item 7.6.

Please download the two samples attached to this assignment. Only complete one form and replace all the red content with your content. All forms have to be electronically signed by the supervisor. Submit the 'email' evidence in the form of a saved email or screenshot of the email.



---Research Ethics Forms 2023



T.3. Template of a Project Documentation (Dissertation)

To do: View



T.4. Ethical Approval Form (Samples and Templates)



T.5. Research Consent Forms (Templates)



T.6. Additional Practice: Quantitative Data Analysis using MS Excel

Ethical Approval

- The Committee will review all forms and will contact the student and supervisor if there are any issues that need to be addressed
 - A short form application will be required in circumstances where Form B is deemed insufficient.
- Applications submitted without your supervisor's explicit approval will not be considered.
- First submission deadline is **26th November 2025**
- **Submitted on Moodle**

Alternatively!

- IF you are using datasets only (such as AI training).
- If you will conduct a pilot study of your work within UEL.
- If your research is not going to touch on anything sensitive.
- You can do internal validation. We will talk about this later...

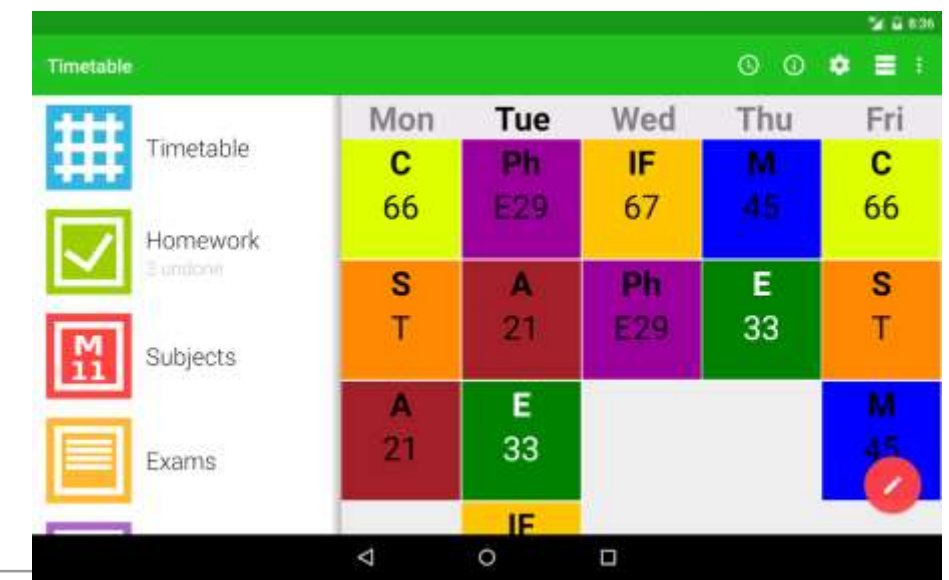
Reflection 2:

- Always consult with your supervisor if you are not sure.
- Any questions?

Ethical Approval Case Studies

- Review case studies 1 – 4
- In each case, decide if
 - Ethical approval is required and, if it is
 - Identify the correct form.

Case Study 1



The screenshot shows a mobile app interface for a timetable. On the left is a sidebar with icons and labels: 'Timetable' (grid icon), 'Homework' (checkmark icon), 'Subjects' (book icon), and 'Exams' (calendar icon). The main area displays a weekly grid with columns for days of the week (Mon to Fri) and rows for different time slots or subjects. The grid cells contain text like 'C 66', 'Ph E29', 'IF 67', 'M 45', 'C 66', 'S T', 'A 21', 'Ph E29', 'E 33', 'S T', 'A 21', 'E 33', and 'M 45'. The app has a green header bar and a black bottom navigation bar.

	Mon	Tue	Wed	Thu	Fri
Row 1	C 66	Ph E29	IF 67	M 45	C 66
Row 2	S T	A 21	Ph E29	E 33	S T
Row 3	A 21	E 33			M 45
Row 4		IF			

Abdul is planning to develop a mobile timetable app for UEL students. He needs UEL students to help him during the requirements gathering stage of his project and with user acceptance testing. Abdul plans to interview the students during the requirements gathering stage and to use questionnaires to gain feedback during the user acceptance test.

Does Abdul need ethical approval? If so, which form should he complete?

Case Study 2



Mike's project involves the analysis of large amounts of data relating to crime in the UK. The data will be obtained from data.gov.uk, a UK Government project to make available non-personal (i.e. aggregated and anonymised) UK government data as open data.

Does Mike need ethical approval?

Case Study 3



Rachael wants to develop a mobile app to help former soldiers suffering from PTSD. As part of her requirements gathering, she wants to interview former soldiers who have suffered from PTSD. She does not intend to ask the soldiers questions about their experiences of frontline service but will simply ask them for their views about the features and functionality of her app.

Does Rachael need ethical approval? If so, which form should she fill in?

Case Study 4



Rachael has changed her mind. She has decided not to talk to former soldiers but instead to discuss the proposed features and functionality of her app with health professionals who have been trained to support former soldiers suffering from PTSD.

Does this change make a difference to the ethical approval process?

Protect Your Participants!

Do not include personal information within your reports

- unless absolutely necessary AND
- without the permission of the individual(s) concerned.

If your project involves interviews, questionnaires etc. ensure

- voluntary participation,
- informed consent,
- confidentiality (or even anonymity)

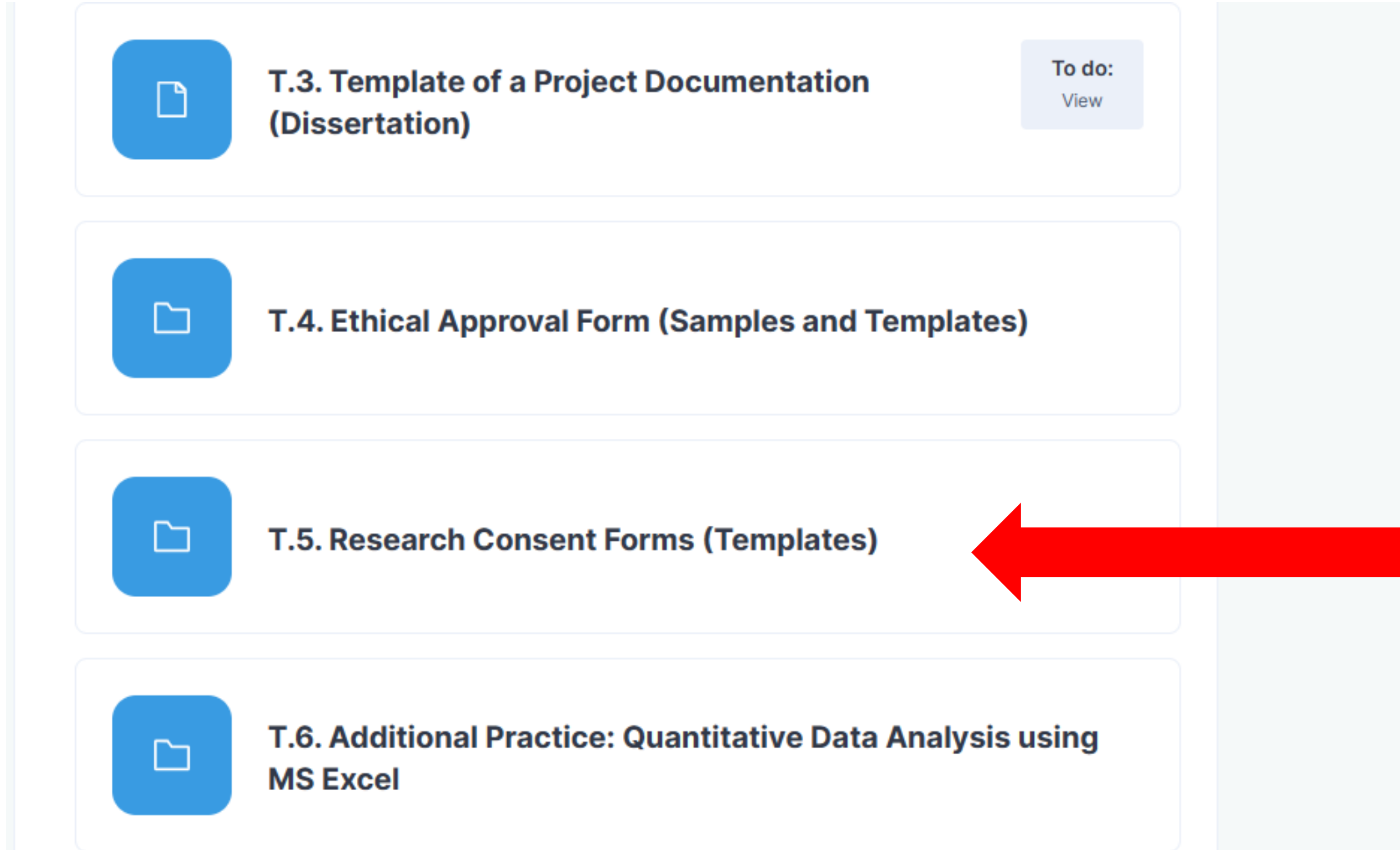
And make sure that you adhere to the Data Protection Act 2018, where relevant

Having a Consent form signed!!

- If you are conducting surveys or interviews, you have to have a consent form signed by the participants.
- These consent forms can be done electronically.
- Use on of two examples found under the template section.

Consent Form Templates:

- Found on Moodle under Template section (T.5)



The screenshot displays a list of four template items in a Moodle interface. Each item is represented by a blue square icon with a white document or folder symbol, followed by the item's title. The first item, 'T.3. Template of a Project Documentation (Dissertation)', includes a 'To do: View' button. The third item, 'T.5. Research Consent Forms (Templates)', is highlighted by a large red arrow pointing towards it from the right. The items are listed vertically, separated by thin horizontal lines.

Icon	Item Name	Buttons
Document	T.3. Template of a Project Documentation (Dissertation)	To do: View
Folder	T.4. Ethical Approval Form (Samples and Templates)	
Folder	T.5. Research Consent Forms (Templates)	
Folder	T.6. Additional Practice: Quantitative Data Analysis using MS Excel	

Data Protection

If your project handles any personal information relating to living people, you need to be aware of the UK Data Protection Act (UK GDPR 2018) and its restrictions on your project.

The main principles of the Act that you should be aware of include:

- Data should only be used for the specific purpose for which it was gathered in the first place.
- Individuals have the right to access data held about them.
- Data may not be disclosed to third parties without the permission of the individual.
- If personal data are kept, these data must be appropriately protected.
- Personal data should be kept for no longer than necessary.

(UK Government. Data Protection Act 2018. Available online at [Data Protection Act 2018 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2018/12/data-protection-act-2018))

Reflection 3:

- Check if you can be approved TODAY! In the next part, I will talk to you about how you can get approved internally.
- Do discuss your project with your supervisor before you fill out the online form.
- Any general questions? (Do not discuss your individual project here).

How to get approved TODAY!!

- Yes. Only on CN6000, I was able to negotiate an exception, but students have to fill out the online form found under section 7.6 on Moodle page.

7.6. The Ethical Approval Form:



ETHICS

CN6000 Internal Ethical Approval Process 2023

Only complete this form if you have already received approval for the Proposal. If you complete this form before getting the final approval of your proposal, this form will be deleted, and you will be required to do it again!

Hi, Fadi. When you submit this form, the owner will see your name and email address.

* Required

Do you need internal approval?

This section aims to check if you need internal approval in the first place. If you are not applying field research, then you may not need internal or external approval.

1. Have you received the final Proposal Approval? That is the proposal has

Alternatively, you can click on the link to open it on a new page:

<https://forms.office.com/Pages/ResponsePage.aspx?id=aaKUx5sud0etRi0Z2BGW1qS2Ljw3259NmgdTaKKknKJUMU8yVThTWVRaV0ZQWVVGv1FSM0c>

How to get approved TODAY!!

- **Make sure you are logged in via your online email for the form to work!**

Hi, Fadi. When you submit this form, the owner will see your name and email address.

* Required

Do you need internal approval? 

This section aims to check if you need internal approval in the first place. If you are not applying field research, then you may not need internal or external approval.

1. Have you received the final Proposal Approval? That is the proposal has been reviewed by the 'second supervisor' and it has been approved? * 

☐ Yes

☐ No

☐ Maybe

2. My study will not involve collecting any data from humans. It is either just based on published datasets that I did not create or there are no datasets at all part of my study. * 

☐ True

☐ False

3. Please state your topic title: * 

Enter your answer

Let us try this together now

How to get approved TODAY!!

- **Make sure you are logged in via your online email for the form to work!**

Note that 90% of you may be able to be approved today!

Hi, Fadi. When you submit this form, the owner will see your name and email address.

* Required

Do you need internal approval? 

This section aims to check if you need internal approval in the first place. If you are not applying field research, then you may not need internal or external approval.

1. Have you received the final Proposal Approval? That is the proposal has been reviewed by the 'second supervisor' and it has been approved? * 

☐ Yes

☐ No

☐ Maybe

2. My study will not involve collecting any data from humans. It is either just based on published datasets that I did not create or there are no datasets at all part of my study. * 

☐ True

☐ False

3. Please state your topic title: * 

Enter your answer

What makes a researcher or a scientist trustworthy?

- **Honesty.**
- **Integrity.**
- **Willing to present facts, even if it goes against everything they believe in!**
- **Ready to challenge their own biases!**



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Ethics: Unbiased reporting

- As scientists and researchers, it is our duty to report our findings regardless of our interest, values, beliefs, or gains – while still considering the impact of our findings.
- **Critical thinking** and challenging our biasness starts with understanding a very important term:
- **Cognitive Dissonance**

Ethics: Unbiased reporting

COGNITIVE DISSONANCE



An unpleasant and mental discomfort that results from facing information presented as facts that conflicts your beliefs, values, or attitudes.



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Ethics: Unbiased reporting

- **In research:**
 - Link between Calcium intake and bone density [1].
 - Research linking vaccine to autism [2].
- **Why is this important?**
 - A.I. is coming, Big data storage, cybercrime increasing...big challenges are yet to come!

Home Reading:

- The following are home reading to enhance your dissertation work.

Legal, Social & Ethical Issues in Your Project

- It is vital that your project reports consider:
 - Legal
 - Social
 - Ethical issues
- What are the legal, social and ethical issues **associated with your project** and how will you/did you address them?
 - In your methodology: Please provide evidence that you addressed them e.g. covering letters, confidentiality clauses, ethical approval forms etc.

Environmental Impact: Considerations



- What is Environmental Impact?
 - Why should we care?
 - How does this relate to Computing?
- What is Ethical Impact?
 - How does it relate to Computing?
- Why should we consider environmental and ethical impacts of everything we do?

What is environmental Impact?



- It is the **assessment and evaluation** on the likely effect an activity has on the environment.
- This could be **negative** impact and/or **positive** impact.
- Sometimes, it is an attempt to review how the project could be made better in a way the **reduces its negative impact and increases its positive impact**.



What is environmental Impact?

- The key points in environmental impact are:
 - Recycle
 - Reduce
 - Reuse
 - Repair
- Why should we care?

How does this relate to Computing?



- Computing projects can help:
 1. Saving fuel and pollution as people do not drive around searching for outlets.
 - Online product selling
 2. Paperless billing and e-tickets of all sorts save paper, ink, electricity, and trees.
 - Consider printing less where possible.
 3. Reuse of products, especially as they are resold on e-Bay or another website:
 - Don't always go for new.
 4. Fewer buildings of offices/stores, less electricity, less water and detergents, less building resources used
 - What most e-commerce companies would say.

How does this relate to Computing?

- Computing projects can help:
- 5. Encourage recycling and caring about the environment:
 - social media and apps.
- 6. Recycling electronics:
 - What to do with electronics once we no longer need them?
 - Why should you never throw them in landfills?
- 7. Use energy efficient settings:
 - Low bright
 - Auto-switch off
 - LED monitors / Lights
 - A+++ energy efficient products.





What is Ethical Impact?

- **Ethical impact** is about assessing and evaluation the impact of an activity on people and communities:
 - Employees, Customers, and Supply Chain.
- It can also include ethical conduct and taking active measures not to be involved illegal activities:
 - Downloading or installing illegal software.
 - Using materials without authorization.
 - Facilitating anything involving computer crime.
 - Illegal spying on customers or employees.
 - Distribution of spam.
 - Stealing using computers.
 - ...etc.

How does this relate to Computing?



When planning a system, you may:

1. Consider the employees' health and well-being is taken into consideration:
 - a. **Stress** from using computers.
 - b. Emphasizing **breaks** and exercises during long extended working hours.
 - c. Using **ergonomic** chairs and computer equipment.
 - d. **Health and safety**.
 - e. **Training** managers and employees to consider impact of computers on themselves and others.



How does this relate to Computing?

When planning a system:

2- We must make sure employees are not the soft target for cost saving.

a. Not to rush and **justify new system** as 'saving on number of people working!'

b. Where possible, **training of employees** on the new system and expanding the operations would be a much better justification for a new system.

How does this relate to Computing?



3- Using technology that would enhance our ethical impact:

- a. Using '**remote access working**' when employees are unable to come to work:
 - family illness, extended maternity leaves, extended recovery from operations...etc.
- b. Using technology to make work **accessible to disabled people**:
 - the blind, the deaf, wheelchair users, and paralyzed individuals.
- c. **Donating** old computers and IT equipment:
 - donating to less privileged schools rather than selling them at heavily discounted prices to middlemen who will get all the profit.
- d. Encourage culture of buying equipment from established companies who encourage ethical practices in their **supply chain**.

Discussions

- How can you incorporate this into your project?
- How can you make your project have positive environmental and ethical impact.



Learning Objectives

Upon completion of this topic, you should be able to:

- Explain why consideration of legal and ethical issues in the context of the final year project is important.
- Identify specific legal and ethical issues that should be considered when conducting research.
- Identify the legal and ethical issues relevant to your project.
- Identify environmental impact of computing projects.



Directed Reading

- Dawson, C. W. (2015) Projects in Computing and Information Systems: A Student's Guide. 3rd ed. Harlow, Essex: Pearson Education, pps. 38 – 40 & Section 10.3

