# Working with Users and Ethics

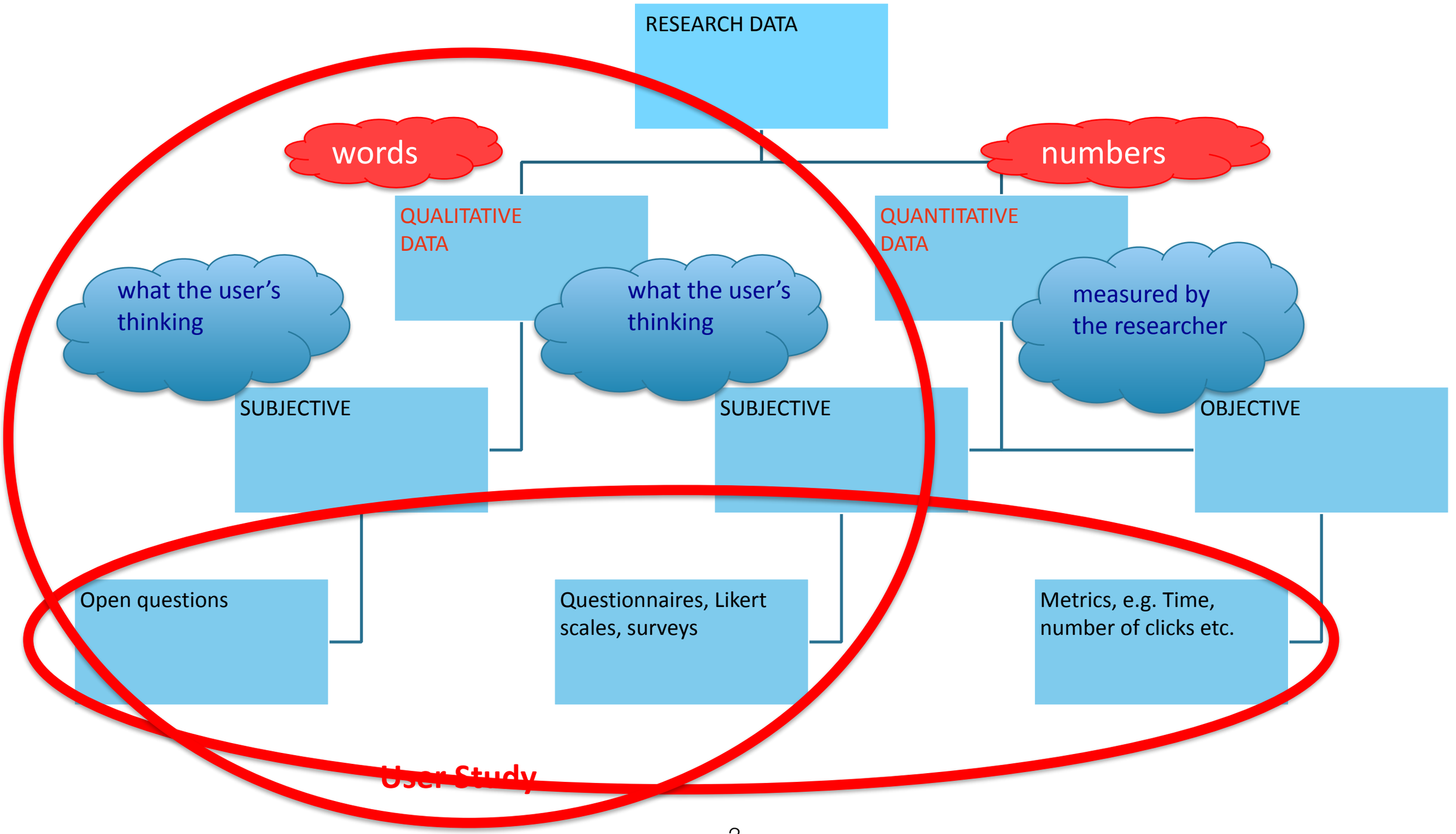
F21RP - Research Methods and Project Planning

Adapted from slides provided by  Ryad, Ioannis, Helen and Frank

# Learning Outcomes

- Surveys
  - Question Types
- Confidentiality and Data
- Ethics of Experiments
  - MACS Ethics Clearance Process

# Experimental Flowchart



# Ways to work with users

- Focus Groups
- Interviews
- Surveys
  - Standardised questionnaires — e.g., SUS
- Prototyping
- User Experience (UX) testing
- Expert Consultation
- Crowdsourcing

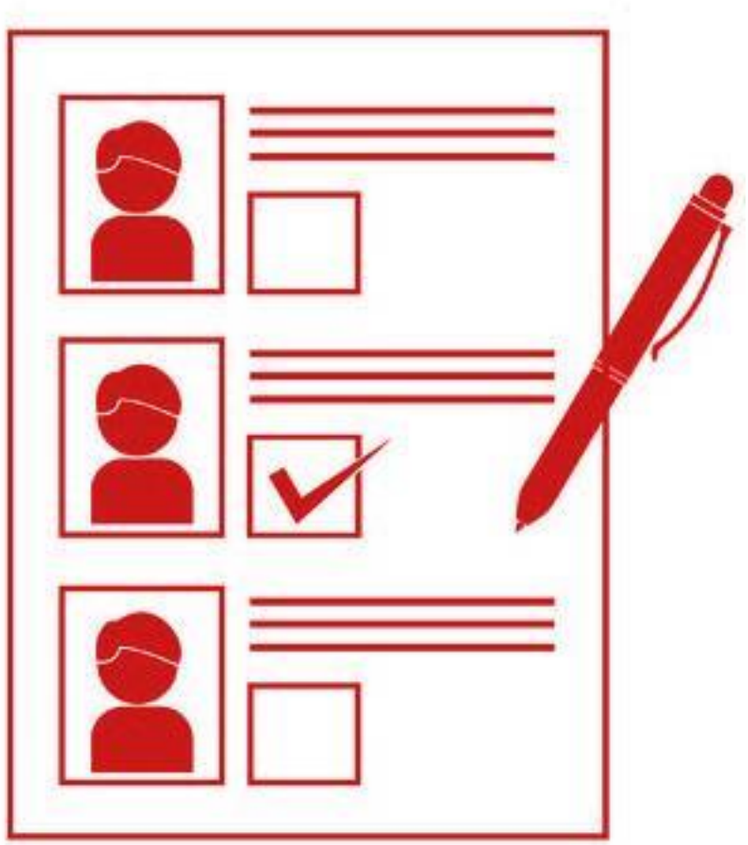

| | Strongly disagree | | | | Strongly agree |
|---|---|---|---|---|---|
| 1. I think that I would like to use this system frequently | 1 | 2 | 3 | 4 | 5 |
| 2. I found the system unnecessarily complex | 1 | 2 | 3 | 4 | 5 |
| 3. I thought the system was easy to use | 1 | 2 | 3 | 4 | 5 |
| 4. I think I would need the support of a technical person to be able to use this system | 1 | 2 | 3 | 4 | 5 |
| 5. I found the various functions in this system were well integrated | 1 | 2 | 3 | 4 | 5 |
| 6. I thought there was too much inconsistency in this system | 1 | 2 | 3 | 4 | 5 |
| 7. I would imagine that most people would learn to use this system very quickly | 1 | 2 | 3 | 4 | 5 |
| 8. I found the system very cumbersome to use | 1 | 2 | 3 | 4 | 5 |
| 9. I felt very confident using the system | 1 | 2 | 3 | 4 | 5 |
| 10. I needed to learn a lot of things before I could get going with this system | 1 | 2 | 3 | 4 | 5 |

# How many users?

- Formative evaluation (User Centred Design) – finding out what users think before software is finished.
  - Exploratory – require depth not loads of users

- Summative evaluation – Hypothesis testing on final product (e.g., system A vs system B)
  - Often requires lots of people for statistically significant results

# Formulating Questions for Surveys

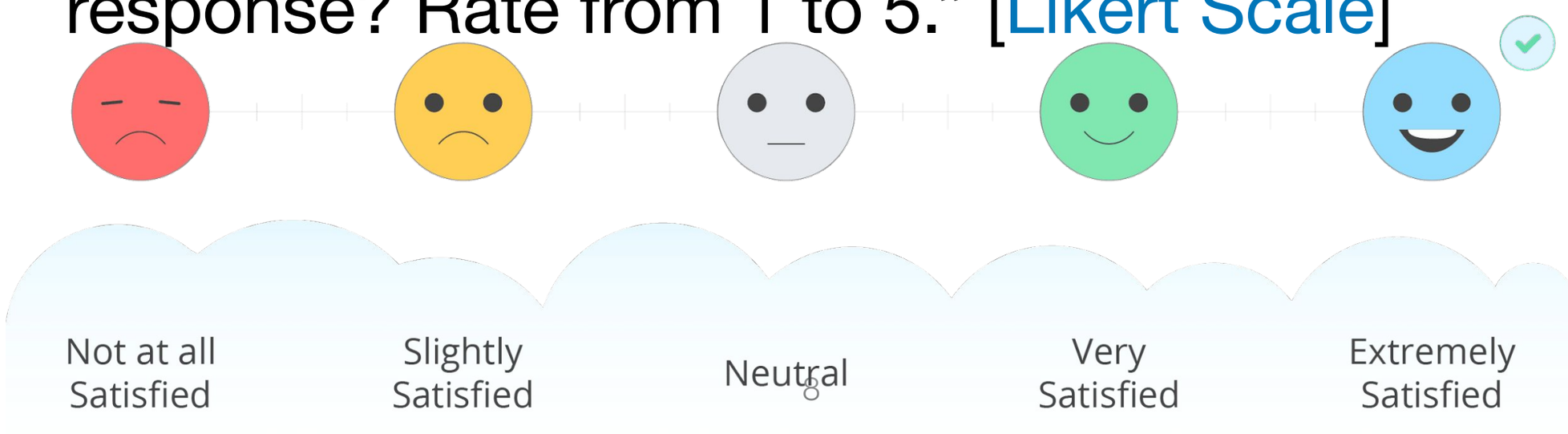


# Question types

- Binary questions – a question with only two possible answers (e.g. Yes/No)
  - Avoid in general because it forces the interviewee to pick one even if it doesn't represent her/his opinion

# Question types

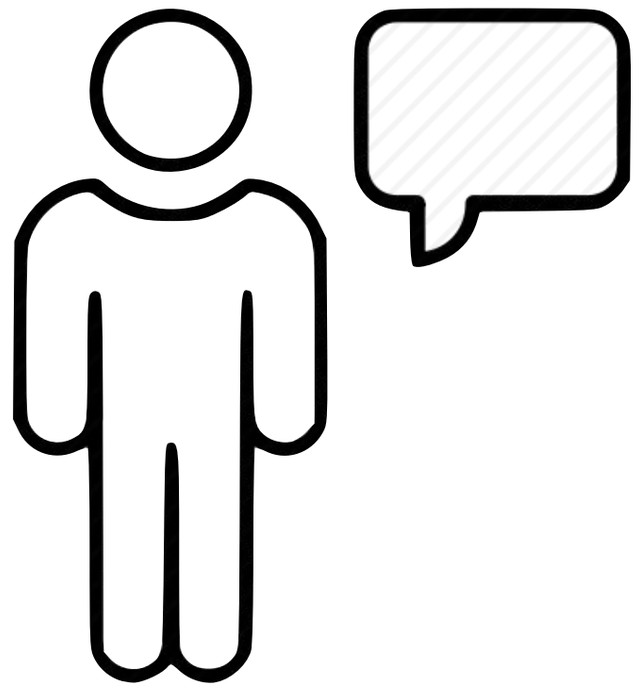
- Closed questions – used for specific, factual information or clarification questions
  - e.g. “What type of phone do you use? Pick one from the pull down list.”
  - e.g., “How engaging was the dialogue system’s response? Rate from 1 to 5.” [Likert Scale]



# Question types

- Open-ended questions – used to invite participant to describe his experience
  - e.g., “describe what you see on this screen”

- Useful for getting information from user without biasing her/his response



# Use Standardised Questionnaires

- Standardised questions are tried and tested. They have
  - good consistency across questions (i.e., they are rated pretty much along the same scale), and
  - good validity (i.e., they measure what they are supposed to)
- Examples
  - QUIS (requires license)
  - SUMI (requires license)
  - PSSUQ (Free but cite source)
  - SUS (Free but cite source)

Participant ID: _____ Site: _____ Date: ___/___/___

# System Usability Scale

**Instructions:** For each of the following statements, mark one box that best describes your reactions to the website *today*.

| | | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|---|
| 1. | I think that I would like to use this website frequently. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. | I found this website unnecessarily complex. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. | I thought this website was easy to use. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. | I think that I would need assistance to be able to use this website. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. | I found the various functions in this website were well integrated. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. | I thought there was too much inconsistency in this website. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. | I would imagine that most people would learn to use this website very quickly. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. | I found this website very cumbersome/awkward to use. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. | I felt very confident using this website. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. | I needed to learn a lot of things before I could get going with this website. | ☐ | ☐ | ☐ | ☐ | ☐ |

Please provide any comments about this website:

# Ethics of Experiments

- MACS Ethics Clearance Process
- Information Sheet and Informed Consent
- Data: Confidentiality and Privacy
- Anonymisation X Pseudo-anonymisation
- Common Errors

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# Ethics Form

Online form through MACS Project System - MSc projects

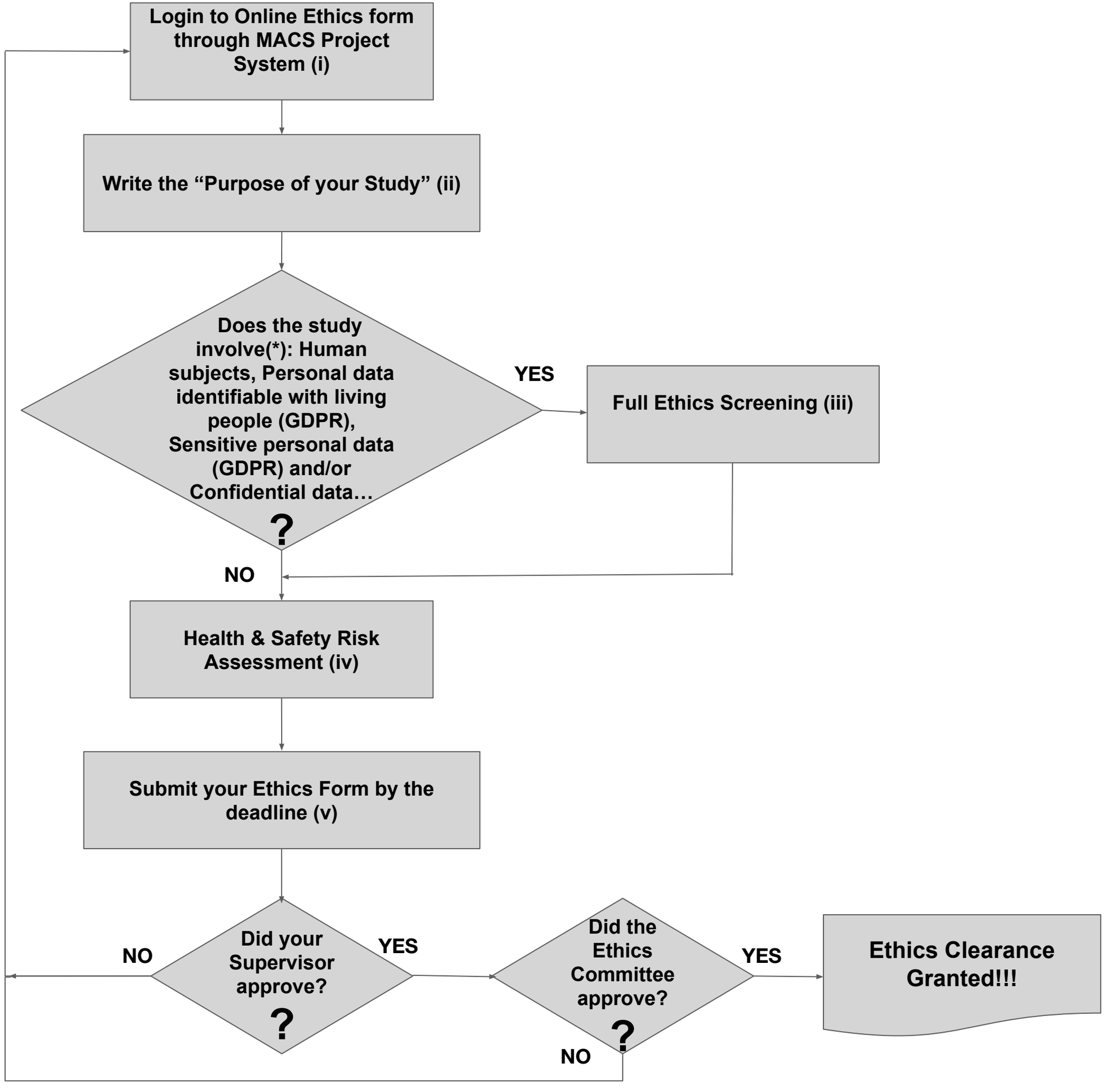
**ALL** projects types should fill in the Ethics Form

**SOME** projects will have to obtain full ethics clearance:

- Use of Human Subjects for any Experimental Studies (deception, i.e., WoZ, special equipment, medical appliances, Interface assessment, HRI, Game playing, etc.)
- Personal data from external sources (e.g., datasets)
- Personal data from collecting data or observing human behaviour where they may not know they are being observed
- Signed Consent Forms (uploaded online or handed in to MACS office - further instructions on how to do this TBA)
- Risk Assessment (Healthy and Safety)
- GDPR compliant
- Process:
  - Students submits form before the deadline (Week 8 on the 6th of March, 2024)
  - Supervisor approves form
  - Ethics Coordinator approves form before the **Research Report (aka Deliverable 1)** is submitted : deadline (Week 14 on the 17th of April, 2024)

# Ethics Clearance Process

(*) detailed options are on the ethics form



# “Purpose of your Study”

- Describe the purpose of the studies:
  - You must state the aim of the study and the methods to be used
  - This might include:
    - Experiment with Human Subjects (i.e., Participants)
    - Use of External dataset
    - Game(s) specification (what the game is about?)
    - HRI, special equipment, medical device, wearables
- Describe the experiment protocol (if relevant…)
  - What does a participant have to do
  - What data is being collected and how
  - How data will be stored

# Recruitment

- Usually we recruit HWU students or staff
- Children or Young Adults (<16 yrs) require a guardian to give consent
- **Vulnerable users:**
  - Children
  - Elderly
  - Mentally ill or other illness preventing users from giving consent
- HWU students with learning profile can be considered **vulnerable!**

# Vulnerable participants

- Children, the elderly, the mentally ill may not be able to give informed consent

- Extra care must be taken to protect them

- Children must have parental consent

- You must be legally cleared to work with children unless a guardian (e.g. Teacher) is always present

- Other vulnerable subjects may need a guardian present during the study

# Vulnerable Participants

1. Vulnerable participants must only be involved if this is absolutely necessary to the research being carried out : there must be some potential benefit to them of the research being carried out

2. You must take account of their specific vulnerability in the design of your study and in the content of the **Consent Form**

3. Depending on the type of vulnerability, you may need Disclosure Scotland or DHA clearance to carry out the study

4. Depending on the type of vulnerability, they may not be able to give personal **informed consent**

5. Participants with **cognitive impairments** such as dementia may need consent from a  Guardian

6. Many types of sensory or cognitive impairments may make participants much more liable to **stress** and it is mandatory for your study design to take this into account. For example you may provide a **STOP card** a participant can raise if they feel over-stressed

# Informed Consent

- Prospective participants must be provided with:
  - Information sheet
  - Consent form

- Given time and opportunity to decide

- NO undue pressure to participate

# The process of obtaining Informed Consent

- Identify participant population
- Produce **Information Sheet** and **Consent Form** documents
- Present **Information Sheet with** research information including experiment protocols to participant and discuss its contents
  - indicating that **withdrawal** at any time is possible
- Answer participants questions
- Give to each participant a copy of the **Consent Form**
- Allow the participant time to consider
- Meet participant and discuss documents, to answer any more questions and assess participants understanding
- Obtain appropriate signed **Consent Form**
- **Store all Consent Forms in a safe place (*) with restricted access**
- Start research

(*) Signed **Consent Forms** must be uploaded online or handed in to MACS School at the end of your experiments. We will give you further instructions on how to do this asap.

# Principle: Information Sheet

- There should be no pressure to participate!

- Participants should be told:

  - The aim of the research
  - The process they will go through
  - Any risks/consequences involved
  - Why their participation is necessary
  - What information will be gathered
  - How and to whom will this information be reported

# Information Sheet

- What data being collected
- How data will be used
- How data will be stored
  - MUST be stored securely on HWU servers (e.g.OneDrive)
- How participants can access their data
  - And request removal of their data

# Consent Form

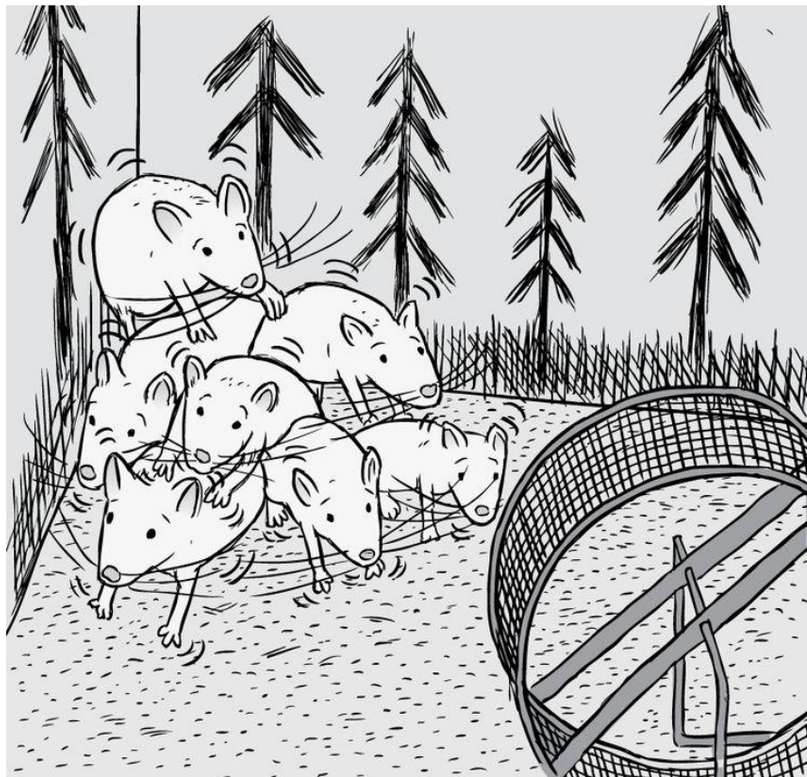
- Objective of project
- What will experiment involve
- Tasks that participant will perform
- Data will be stored securely
  - Can contact researcher to remove data
- Participation is voluntary and can withdraw at any time without any penalty
- Screen **vulnerable users**
  - Use filter questions (e.g. over 16, not suffering from any mental illness or physical disabilities that may impair giving consent)
- Example Consent Forms at F21RP @ CANVAS

# Withdrawal

- You must stress participation is voluntary and participant can withdraw at any time

- You must state that refusing to participate will involve no penalty or decrease in benefits to which the participant is otherwise entitled (e.g., vouchers, money, gifts, raffle tickets, etc.)

- If withdrawal involves limitations or risks, such as danger to participant's well being, these must also be clearly explained



# Confidentiality and Data

- Who has access to your collected data?
- What would happen if it got into the wrong hands?
- GDPR: General Data Protection Regulation

# Personal Data

- Anonymous and linked (coded) == pseudo-anonymised
  - E.g., “Subject7, age=33, occupation=banker, gender=M”
    - Subject7 is John Doe (separate secure sheet)

- Anonymous and unlinked == truly anonymised
  - E.g., “Subject7, age=33, occupation=banker, gender=M”
    - Subject7 is ???????
  - Must **not contain:** name, address, phone/fax number, email address, full postcode, social security, photograph etc.

# Personal Data

- Linked data are typically used when it may be necessary to refer back to the original records for further information, or for verification, or if it is planned to provide feedback to participants or service providers.

- Unlinked data usually ensures confidentiality but prevents follow-up, verification or feedback, may not be compatible with the aims of the project and may not be in the interests of the individuals or service providers.

**State in your Ethics Form!**

# Anonymise & Pseudo-anonymise

## Anonymisation

- No personal data is collected from participants
- No names, emails, ip-addresses
- No set of data that can help identify a user
  - E.g. MSc Network Security student, from country A, age 23, gender female.
  - If we have only one female student from country A, aged 23 ( not anonymous)
- No way to link data back to the participant

# Anonymise & Pseudo-anonymise

## Pseudo-anonymisation

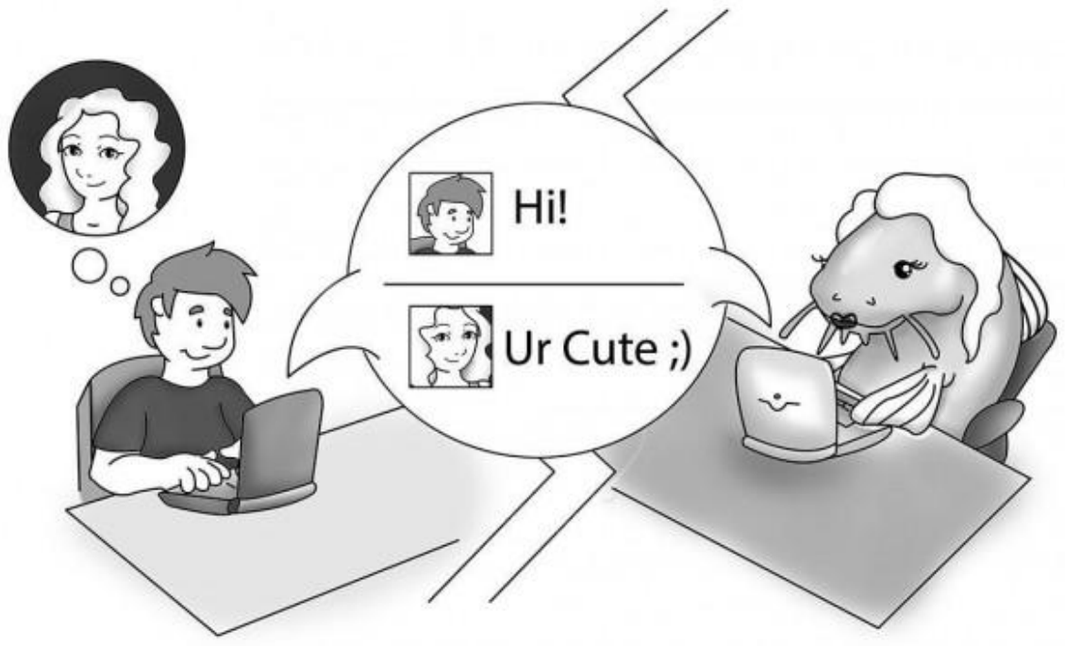
- Collect personal data
  - E.g. to contact participant later
- Use a participant Id for each participant
- Store Id and personal data in an encrypted file separate from experiment data
- All participants have right to access and remove their data
  - Need to mention this in consent form
  - Need researcher's email address in consent form

# Confidentiality and Data (GDPR)

- Collected data must be anonymised
- Video/Audio recording requires specific permission
  - Impacts anonymity
  - Must be included in the Consent Form
  - Explain when, where and who has or will have access of this data
- Save data on the HWU server: OneDrive (nowhere else!)
- Who has access to data (e.g., student, supervisor)

# Deception

- Maybe you cannot get the data if participants know the purpose of the experiment…
  - E.g., Wizard of Oz experiments involve deception




- Reveal the deception to the subject at the end of the study

# Deception

Wizard of Oz

- Some experiments require participants NOT to be aware of data being collected
- Deception must be justified by needs to research
  - No other way to collect data
- All participants must be made aware of the deception at the end of the experiment
  - Including users who withdraw before the experiment ends

# (iv) Health and Safety Risk Assessment

- Health and safety issues on the use of mobile and non-standard devices
  - Physical: e.g., with robot interaction, mobile phones, tablets
  - Sensory: eye-strain, cyber-sickness e.g., with VR headsets, Augmented Reality (AR) glasses, immersive graphics
- Risks:
  - Is there a risk of undue stress or emotional harm to participants?
  - E.g., Testing ‘user experience’ wrt emotional engagement, fun, drama in serious games
- Privacy issues?
  - Capture/use of potentially sensitive personal data

# Mobile devices are NOT standard devices

- Mobile devices are NOT standard devices for ethics approval
  - Mobile phones, tablets, wearable devices

- Cannot predict under what circumstances participant will be using the devices

- ‘Interface Only’ studies must NOT include mobile devices

# Ethically Concerning Studies

- Some topics inherently ethically concerning
  - Health related
  - Emotional state
- You MUST demonstrate that you considered the possibility that the study could have a negative effect on your participants and how you will counteract that
  - E.g. causes people to panic about their health, makes them more stressed/miserable not less

# Conversational Agents

- Conversational agents are rather fallible in the current state-of-the-art and may not behave as you expected
- This is a specific risk in sensitive domains where they could behave insensitively or inappropriately
- In addition, the behaviour of the participant is somewhat unpredictable too and apart from rudeness or inappropriate utterances might also involve revealing sensitive, confidential or self-identifying information you were not expecting
- You must address these risks in your **Ethics Form**

# Common Errors

- Too little information supplied = many iterations…
- Insufficient thought about sensitive topics = many iterations…
- Health and safety omissions for non-standard hardware = many iterations…
- Not clear whether data is fully anonymised = many iterations…
- Not clear where the data comes from = many iterations…

# The trouble with External Datasets and Data Processing Algorithms

- You may think using external datasets are never a problem...
  - Where does the data come from?
  - Has the dataset been ethically approved?
  - Is the dataset publicly available?
- ALSO your data processing algorithm could be biased (e.g., AI, deep learning systems)
  - What can go wrong?
    - Google photo classification
    - The Microsoft chatbot
- YOU are responsible for what your algorithm does!

# MACS Ethics Clearance Process

- Fill in **Ethics Form** with filter questions online
- Review your answers until **Ethics Clearance** is granted (*this could take several iterations with your **supervisor** and **ethics committee** until you get it right*)
- Ethics Form is divided into:
  - Full Ethical Screening
  - No ethics implications
- **Ethics Form** must be **submitted** by the deadline (06/03/2024) and **approved** BEFORE Research Report submission (17/04/2024)
  - **Or your marks will NOT be released**

# Ethics Form

We will practice filling in the Ethics Form during our Tutorial Slot

# Attributions

- https://www.surveylegend.com/wordpress/wp-content/themes/surveylegendtemplate-child/images/blog/likert-type-scale-responses.png