FUNCTIONAL SPECIFICATION

Title: HKDSE "Sorting Hat" Degree Recommendation System
Purpose: To help secondary school students in Hong Kong discover suitable and achievable university degree programmes based on their interests, personality, subject strengths, and career goals.

https://chatgpt.com/canvas/shared/68b90827a7f481918f5b52c3bff77746

https://chatgpt.com/canvas/shared/68b90827a7f481918f5b52c3bff77746

https://join.hkust.edu.hk/admissions/jupas

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1. 👨‍🎓 USER INPUT MODULE

1.1. Career Aspiration

- **Type**: Dropdown + Free text
- **Options**:
    - Predefined list of 20–30 common careers (e.g. Doctor, Architect, Lawyer, Social Worker, Data Scientist, etc.)
    - Option: **"No idea yet"**
    - Free text box: "Other (please specify)"

1.2. University Preferences

- **Type**: Multi-select checkboxes + toggle for "No Preference"
- **Options**:
    - HKU
    - CUHK
    - HKUST
    - PolyU
    - CityU
    - EdUHK
    - HKBU
    - Lingnan
- **Logic**: Filters degree programmes offered by selected institutions

1.3. Discipline / Field Preferences

- **Type**: Multi-select checkboxes + toggle for "No Preference"
- **Examples**:
    - Engineering
    - Arts & Humanities
    - Social Sciences
    - Education
    - Law
    - Business

- Medicine / Health
- Design / Architecture
- Science
- Interdisciplinary

1.4. Interests & Hobbies

- **Type**: Multi-select checklist + Free text
- **Options** (10–15 interest domains):
  - Solving puzzles & logical problems
  - Designing or creating visuals
  - Writing or storytelling
  - Helping others
  - Leadership & organising events
  - Outdoor activities & adventure
  - Science experiments
  - Debating & public speaking
  - Performing arts
  - Technology & gadgets
- **Free text box**: "Other interests"

1.5. Current Year of Study

- **Type**: Single select (dropdown)
- Options: Form 1 to Form 6

1.6. HKDSE Elective Subjects & Predicted Grades

- **Type**: Repeating input fields
- Example:
  - Subject: Geography → Expected Grade: 4
  - Subject: Biology → Expected Grade: 5*
- **Allow blank entries** (e.g. for Form 3–4 students)

1.7. Personality Type (MBTI)

- **Type**: Dropdown (16 MBTI types)
- Add tooltips or hover descriptions of each type:
  - e.g., **INFJ – The Advocate**: Idealistic, empathetic, and driven by values

1.8. Other Constraints or Notes

- **Type**: Free text prompt box
- Examples:
  - "I don't want an indoor-only job"
  - "No government-related roles"
  - "I want to work internationally"

2. 🧠 RECOMMENDATION ENGINE

2.1. Inputs Used

- Career preferences (if selected)
- University filters
- Discipline preferences
- Interests/hobbies
- MBTI personality mapping matrix
- Subject suitability (including HKDSE prerequisites)
- Admission score feasibility (based on past admission bands per degree)
- Transferability/flexibility of degree
- Work environment filters (from free-text box)

2.2. Matching Logic

- **Weighted matching algorithm**:
  - Academic feasibility (based on predicted grades)
  - Interest & personality fit (based on vocational psychology)
  - Career alignment (degrees with clear career paths)
  - University availability filter
  - Disciplines compatibility
  - Constraints (exclude degrees conflicting with user filters)

2.3. Output Scoring

- Each degree is scored across 4 axes:
  1. 🎓 *Feasibility (Admission Chances)*
  2. 🧩 *Personality Fit*
  3. 💼 *Career Match Potential*
  4. 🔄 *Flexibility/Transferability*
- Display as a radar chart or bar graph per recommendation (optional)

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3. 📋 OUTPUT DISPLAY MODULE

3.1. Recommended Degrees List

- Show **top 3–5 degrees**
- For each:
  - Degree Title
  - University
  - Matching Score Breakdown
  - Admission Range (e.g., "Median score last year: 26.5")
  - Matched Career Paths (e.g. "Digital Marketer, UI/UX Designer")
  - Personality Fit Narrative
  - Subject Suitability Note
  - Transferability Note (e.g., "Can transfer to BA in Communications")

3.2. Narrative Summary (per recommendation)

- Example:

  "As an ENFP with strong interests in creativity and social engagement, you may find the **BA in Media & Cultural Studies** at CUHK highly rewarding. Your expected grades in English and Liberal Studies support this path. Career prospects include public relations, content creation, and marketing. This degree offers flexibility to branch into journalism or education later."

3.3. Visualisation Options

- Option to view results as:
  - Table
  - Card view with icons
  - Radar comparison chart
  - Downloadable PDF

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4. 🔧 BACKEND DATASETS

4.1. Required Data Tables

- HKDSE Subjects + prerequisite mapping per degree
- Degree admission band per university (latest 3 years)
- Degree-to-career mapping
- Degree flexibility/transferrability table
- Personality-to-career mapping
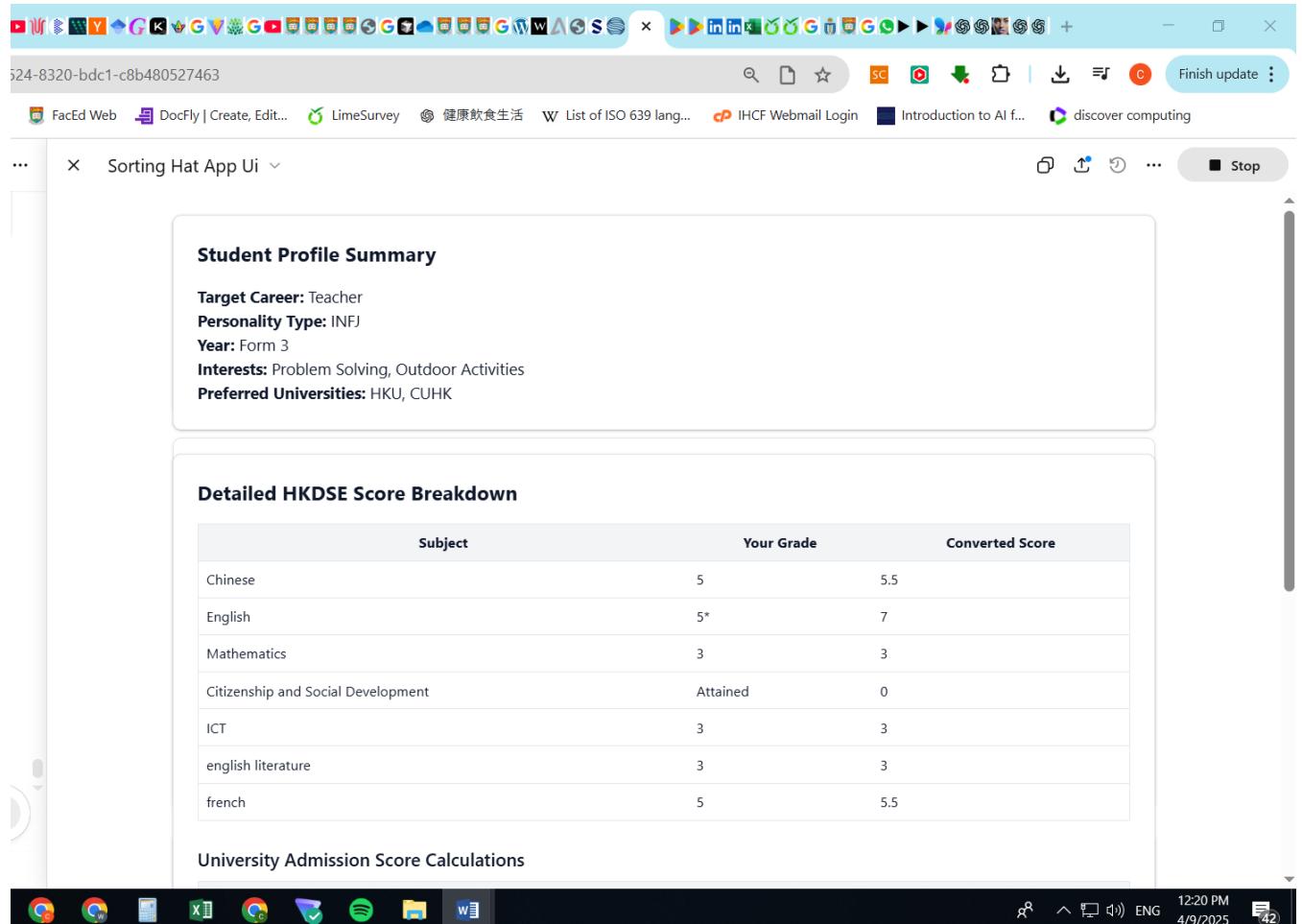- Interest-to-discipline mapping

4.2. Matrix Matching Files

- MBTI → Disciplines matrix
- Interests → Disciplines mapping
- Discipline → Careers
- Subject strength → Degree feasibility (HKDSE logic)

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5. ⚙ ADMIN & AI TUNING MODULE

- Admin can:
  - Update admission score data yearly
  - Update mappings
  - Add career pathways or new degrees
  - Monitor which traits are most commonly selected

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6. ✏️ FUTURE EXPANSIONS (Optional v2+)

- Add "Compare Two Degrees"
- Add real student testimonials or alumni profiles
- Add scholarship matching logic
- Add career personality quiz for students unsure of MBTI
- API integration with JUPAS (if granted)

Student Profile Summary

Target Career: Teacher
Personality Type: INFJ
Year: Form 3
Interests: Problem Solving, Outdoor Activities
Preferred Universities: HKU, CUHK

Detailed HKDSE Score Breakdown

Subject	Your Grade	Converted Score
Chinese	5	5.5
English	5*	7
Mathematics	3	3
Citizenship and Social Development	Attained	0
ICT	3	3
english literature	3	3
french	5	5.5

University Admission Score Calculations

Sorting Hat App Ui

ICT	3	3
english literature	3	3
french	5	5.5

University Admission Score Calculations

University	Calculation Method	Your Score
HKU	ENG + MATH + Best 3 electives (french, ICT, english literature)	21.5
CUHK	CHI + ENG + MATH + Best 3 electives (french, ICT, english literature)	27

💡 These calculations reflect 2024 university-specific admission score formulas. Weighted subjects (e.g. M1/M2, Biology) may boost or reduce competitiveness.

Top Degree Recommendations

Programme	University	Median Score	Your Score	Subject Match	Personality Fit	Feasibility	Comment
BEd in English Language Education	HKU	26.5	21.5	✅	❌	Unlikely	Improve English or add Literature in English to strengthen subject relevance.
BSocSc in Psychology	CUHK	27	27	❌	✅	Strong	Your CUHK score includes Chinese and meets the programme threshold. Good match for reflective learners.

MBTI Type	Best-fit Disciplines	Suggested Careers
ENFJ	Education, Social Sciences, Human Resources	Teacher, Counselor, Social Worker
ENTP	Entrepreneurship, Innovation, Tech Design	Startup Founder, Product Manager, Creative Director
INTJ	Engineering, Computer Science, Strategy	Data Scientist, Systems Analyst, Strategist
INFP	Humanities, Arts, Counseling	Writer, Psychologist, Art Therapist
ESFJ	Nursing, Teaching, Public Relations	Nurse, Teacher, Community Manager
ISTJ	Accounting, Law, Logistics	Auditor, Lawyer, Operations Manager
ESTP	Sales, Sports Science, Emergency Services	Sales Executive, Athlete, Paramedic
ISFP	Design, Healthcare, Nature Conservation	Interior Designer, Nurse, Wildlife Officer
INFJ	Psychology, Social Work, Literature	Clinical Psychologist, Author, NGO Officer
ESTJ	Business Admin, Engineering Management	Project Manager, Civil Engineer, Business Exec
ISTP	Mechanical Engineering, Aviation, IT	Pilot, Technician, Software Engineer
ESFP	Hospitality, Entertainment, Events	Hotel Manager, Actor, Event Planner
INTP	Theoretical Physics, Philosophy, Data Science	Researcher, Academic, Data Analyst
ISFJ	Healthcare, Primary Education, Non-Profit Work	Nurse, Primary Teacher, Charity Coordinator
ENTJ	Finance, Management, Leadership	CEO, Lawyer, Business Consultant

| ENFP | Media, Education, Public Speaking | Journalist, Educator, Motivational Speaker |