Career Orientation Test Report

1 Overview of the Career Orientation Test

The Career Orientation Test is designed to assist students in grades 9–11 in selecting suitable professions based on their academic achievements, personality traits, interests, values, and work preferences. The test aims to provide personalized recommendations that align with both academic capabilities and personal inclinations to ensure successful career choices and long-term job satisfaction. The test takes approximately 10–15 minutes to complete and consists of several sections collecting data for analysis.

1.1 Test Structure

The test comprises the following sections:

1. **General Information**:

   - Grade (9, 10, or 11).

   - Region of residence (e.g., Moscow, Ural, Siberia).

   - Average school grade (from 3.0 to 5.0).

2. **Academic Preferences**:

   - Selection of three favorite subjects (e.g., Mathematics, Literature, Computer Science).

   - Selection of two most challenging subjects.

   - Self-assessment of subject knowledge (1 = very weak, 5 = excellent).

   - Participation in academic Olympiads and subjects involved.

3. **Interests and Values:**

- Selection of up to five interests (e.g., helping people, developing technologies, artistic creativity).

- Selection of up to three important aspects of a future profession (e.g., high income, stability, self-fulfillment).

- Work preferences (e.g., working with technology, people, or texts).

4. **Personality and MBTI**:

- Responses to 25 questions (11–35) on a scale from 1 (strongly agree) to 7 (strongly disagree) to determine the MBTI personality type.

5. **Life Scenarios**:

- Preferred role in a project (leader, researcher, executor).

- Preferred work environment (laboratory, meeting room, workshop).

- Preferred problem-solving style (algorithmic or spontaneous).

- Aspects to avoid in work (e.g., constant communication, manual work).

1.2 Factors Used for Profession Evaluation

The test evaluates professions based on the following data:

- **Subject Scores**: Grades in subjects relevant to the profession's entrance exam requirements.

- **MBTI Personality Type**: Determined from responses to questions 11–35, categorized into EI, SN, TF, and JP scales.

- **Interests**: Student's interests compared to those typical for the profession.

- **Values**: Student's values compared to those associated with the profession.

- **Work Preferences**: Preferences for role, workplace, and work style.

- **Exclusions**: Aspects the student wishes to avoid in their work.

2 Weighting Scheme

In the `score_profession_normalized` function in `AI.py`, each profession is assigned a total score (maximum 100) based on the following factors:

Factor	Max Score	Calculation Method
Subject Scores	35	`(sum of grades for required subjects / maximum possible sum) * 35`
MBTI	20	20 points if the student's MBTI type matches the profession's types; otherwise 0
Interests	15	`(number of matching interests / total profession interests) * 15`
Values	15	`(number of matching values / total profession values) * 15`
Work Preferences	10	`(number of matches for role, place, style / 3) * 10`
Exclusion Penalty	-25 per conflict	-25 points for each aspect the student wants to avoid but is present in the profession

Table 1: Weighting scheme for profession scoring

The total score is capped between 0 and 100, and professions are ranked in descending order to select the top 5 recommendations.

3 Rationale for Weights

The weights are chosen to reflect the relative importance of each factor for students preparing for university entrance exams. Below is the rationale for each weight:

1. **Subject Scores (35 points)**: Academic performance is a critical factor for university admission in Russia, particularly in the context of the Unified State Exam (EGE). High grades in relevant subjects determine access to educational programs and, consequently, professions. The high weight of 35% reflects this importance, ensuring recommendations align with the student's academic capabilities. Research confirms that cognitive abilities, measured by academic performance, are strong predictors of professional success (Schmidt & Hunter, 1998).

2. **MBTI (20 points)**: Personality type influences job satisfaction and performance. Studies show that traits like conscientiousness and emotional stability are linked to success in various professions (Roberts et al., 2007). The 20% weight highlights the importance of personality fit but is lower than

subject scores, as personality is less critical for entering a profession than academic results.

3. **Interests (15 points)**: Interests play a significant role in long-term career satisfaction. Holland's RIASEC model emphasizes that matching interests with professional tasks enhances motivation and success (Truity, 2022). The 15% weight acknowledges interests as a meaningful but not dominant factor.

4. **Values (15 points)**: Values, such as self-fulfillment or stability, influence career choice and satisfaction. The 15% weight ensures that personal priorities are considered, which is crucial for motivation.

5. **Work Preferences (10 points)**: Preferences for work environment, role, and style are less critical, as they can be more flexible. The 10% weight reflects their supplementary role in recommendations.

6. **Exclusion Penalty (-25 points per conflict)**: A significant penalty ensures that professions conflicting with the student's exclusions (e.g., avoiding constant communication) receive a low score, effectively ruling out unsuitable options.

4 Analysis and Adjustment of Weights

4.1 Analysis of Current Weights

The current weighting scheme is balanced for students preparing for the EGE, where subject scores are critical for university admission. The MBTI weight (20%) is justified, as personality traits influence long-term satisfaction but are secondary to academic requirements. Interests and values (15% each) account for motivational factors, while work preferences (10%) add an additional layer of personalization. The exclusion penalty effectively eliminates unsuitable professions.

4.2 Proposed Adjustments

Without data on test outcomes or user feedback, precise adjustments are challenging. However, the following adjustments could be considered based on the test's goals:

- **Increasing Weight for Interests and Values**: If the focus shifts to long-term career satisfaction, the weight for interests and values could be increased to 20% each, reducing work preferences to 5%. This would emphasize motivation and personal priorities.

- **Reducing Exclusion Penalty**: The -25% penalty per conflict may be too harsh, especially if exclusions are not absolute. A reduction to -15% or a graduated penalty based on conflict severity could be considered.

- **Dynamic Weights**: Weights could be customizable based on the student's profile (e.g., higher weight for subject scores for 11th graders, higher for interests for 9th graders).

Any adjustments should be validated through studies, such as analyzing how well recommendations align with students' actual career preferences or success in chosen professions.

4.3 Implementation in Code

In the `score_profession_normalized` function, weights are implemented correctly:

- **Subject Scores**: Normalized sum of grades multiplied by 35.

- **MBTI**: 20 points added for a matching personality type.

- **Interests and Values**: Proportion of matches multiplied by 15.

- **Work Preferences**: Number of matches (out of three) multiplied by 10/3.

- **Penalties**: -25 points per conflict.

Note: The code includes a condition (`if not subj_scores`) that assigns default values (5 for basic/advanced subjects, 3 for others) when grades are missing. This may be an error, as the form requires grade input. It is recommended to remove this condition or clarify cases where grades are absent.

5 Rationale for the Career Orientation Test

The test is based on modern career guidance approaches, integrating academic, personality, and motivational factors. The use of MBTI assesses personality traits that influence professional suitability, while subject scores account for academic requirements. Interests and values align with Holland's RIASEC model, where

matching interests with professional tasks enhances satisfaction. Work preferences and exclusions add personalization, considering individual nuances.

5.1 Supporting Research

- **Academic Abilities**: Schmidt and Hunter (1998) demonstrated that cognitive abilities, measured by academic performance, are strong predictors of professional success.

- **Personality**: Roberts et al. (2007) confirmed that traits like conscientiousness and emotional stability predict career outcomes.

- **Interests**: Holland's RIASEC model highlights the importance of interest alignment for job satisfaction (Truity, 2022).

6 Conclusion

The Career Orientation Test provides a comprehensive approach to career selection, integrating academic and personality data. The current weights are balanced for students preparing for the EGE, emphasizing subject scores. Adjustments could enhance the role of interests and values but require validation. The test aligns with modern career guidance practices and is supported by research confirming the predictive power of its factors.

7 References

- Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science*, 2(4), 313–345. https://www.researchgate.net/publication/237822262_The_Power_of_Personality

- Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124(2), 262–274.

- Truity. (2022). Free Holland Code Career Test. https://www.truity.com/test/holland-code-career-test

- Scontrino-Powell. (n.d.). Personality and Job Performance. https://scontrino-powell.com/blog/personality-and-job-performance