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CS4800: AI Fall 16-17

To advise a major, we will need to ask some questions to find out what the user is interested in and enjoys. I choose to use a method that would make it easy to put the data into a logical chart based on five key questions. These are yes or no questions and thus can be broken down into a Truth Table. With this setup, alignment into a major is based appropriately on user input. To calculate how many majors we can come with using five closed-ended questions, we use the formula of 25, which equals 32 different outputs, thus this program will recommend up to thirty-two different major choices. I choose 5 questions rather than more or less because 5 is the first power of 2 which is greater than 20. To further recommend even more majors, we could revise the program to ask more qualifying questions and calculate accordingly the number of potential different outcomes. Using this model, with 6 questions we could advise up to 64 (26) unique majors!

A brief rundown of the logic shows that there are two catch cases, notably for when someone says **yes** to every question or **no** to every question. If someone tends to like everything, a major is Philosophy is advised. If someone tends to dislike everything and prefers indoors, and major in Psychology is advised. These majors are sort of used as base cases for this program.

These five questions are:

1. *Would you prefer to do something that is helpful to others? (yes/no)*
2. *Do you enjoy being a leader or organizer? (yes/no)*
3. *Is it important to be in a major that allows creative freedom? (yes/no)*
4. *Do you prefer to be outdoors over indoors? (yes/no)*
5. *Do you enjoy processing data and working with technology? (yes/no)*

These choices are briefly explained below, and can be further analyzed by the truth table on Page 2 of this document.

1. Those who tend to like being seen as helpful will be geared more towards working with the public more and with law.
2. Those who enjoy leadership and organizing will be recommend towards management and majors that are often best suited for self-starters.
3. The engineering majors tend to be selected for those who like processing data and vary widely depending on other preferences.
4. The agriculture majors are for those who like outdoors, but outdoorsy folk may also find recommendations to many of the other majors that could involve a lot of field work.
5. The majors involving creativity are pigeonholed to the creative, but can also be lumped into some of the other majors if a wider variety of skills are enjoyed.

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| **College Major Advisor Truth Table** | | | | | |
| **Helper** | **Leader** | **Creator** | **Outdoors** | **Data Processor** | **Advised Major** |
| 0 | 0 | 0 | 0 | 0 | Psychology |
| 0 | 0 | 0 | 0 | 1 | Statistics |
| 0 | 0 | 0 | 1 | 0 | Forestry |
| 0 | 0 | 0 | 1 | 1 | Anthropology and Archaeology |
| 0 | 0 | 1 | 0 | 0 | Creative Writing |
| 0 | 0 | 1 | 0 | 1 | Computer Science |
| 0 | 0 | 1 | 1 | 0 | History |
| 0 | 0 | 1 | 1 | 1 | Environmental Sciences |
| 0 | 1 | 0 | 0 | 0 | Business Management |
| 0 | 1 | 0 | 0 | 1 | Economics |
| 0 | 1 | 0 | 1 | 0 | Wildlife Management |
| 0 | 1 | 0 | 1 | 1 | Agricultural Engineer |
| 0 | 1 | 1 | 0 | 0 | Dramatic Arts |
| 0 | 1 | 1 | 0 | 1 | Electronics Engineering |
| 0 | 1 | 1 | 1 | 0 | Agricultural Business and Management |
| 0 | 1 | 1 | 1 | 1 | Geological Engineering |
| 1 | 0 | 0 | 0 | 0 | Social Work and Services |
| 1 | 0 | 0 | 0 | 1 | Bio Engineering |
| 1 | 0 | 0 | 1 | 0 | Botany |
| 1 | 0 | 0 | 1 | 1 | Animal Sciences |
| 1 | 0 | 1 | 0 | 0 | Criminal Justice |
| 1 | 0 | 1 | 0 | 1 | Chemical Engineer |
| 1 | 0 | 1 | 1 | 0 | Veterinary Sciences |
| 1 | 0 | 1 | 1 | 1 | Cell and Molecular Biology |
| 1 | 1 | 0 | 0 | 0 | Pre Law |
| 1 | 1 | 0 | 0 | 1 | Aerospace Aeronautical |
| 1 | 1 | 0 | 1 | 0 | Chemistry |
| 1 | 1 | 0 | 1 | 1 | Chemical Engineering |
| 1 | 1 | 1 | 0 | 0 | Fine Arts |
| 1 | 1 | 1 | 0 | 1 | Astrophysics |
| 1 | 1 | 1 | 1 | 0 | Physics |
| 1 | 1 | 1 | 1 | 1 | Philosophy |
| **Legend**  1 = Yes  0 = No | | | | | |