

```

//
// Exam 1 Review Soln.cpp
// PA 3 Grader
//
// Created by main on 9/25/23.
//

#include <stdio.h>
#include <math.h>

int isVowel(char c) {
    return c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u';
}

int is_first_20_char_vowel_main(void) {
    int exitCode = 0;
    FILE * input = fopen("input.csv", "r");
    FILE * output = fopen("output.log", "r");

    if (input && output) {
        /* Option 1 (Easy) */
        for (int i = 0; i < 20; i += 1) {
            char currentC = (char)fgetc(input);
            if (isVowel(currentC)) {
                fprintf(output, "%c is a vowel\n", currentC);
            } else {
                fprintf(output, "%c is NOT a vowel\n", currentC);
            }
        }

        /* Option 2 (Advanced) */
        int count = 0;
        while (count < 20 && feof(input)) {
            char currentC = (char)fgetc(input);
            if (isVowel(currentC)) {
                fprintf(output, "%c is a vowel\n", currentC);
            } else {
                fprintf(output, "%c is NOT a vowel\n", currentC);
            }
        }

        /* Option 3 (Advanced) */
        char list[20];
        fgets(list, 20, input);
        for (int index = 0; index < 20; index += 1) {
            if (isVowel(list[index])) {
                fprintf(output, "%c is a vowel\n", list[index]);
            } else {

```

```

        fprintf(output, "%c is NOT a vowel\n", list[index]);
    }

}

/* All Options: */
fclose(input);
fclose(output);
} else {
    exitCode = 1;
}

return exitCode;
}

```

```

int armstrong_num_main(void) {
    int input;

    scanf("%d", &input);

    double sum = input;
    int backup = input;

    while (input != 0) {
        sum -= pow(input % 10, 3);
        input /= 10;
    }

    if (sum == 0) {
        printf("%d is an armstrong number", backup);
    } else {
        printf("%d is NOT an armstrong number", backup);
    }

    return 0;
}

```

```

int perfect_num_main(void) {
    int input;

    scanf("%d", &input);

    int sum = 0;

    for (int i = 1; i < input; i += 1) {
        if (i % input == 0) {
            sum += i;
        }
    }
}

```

```
    }  
}  
  
if (sum == input) {  
    printf("%d is a perfect number", input);  
} else {  
    printf("%d is NOT a perfect number", input);  
}  
  
return 0;  
}
```