**PROGRAMMING FUNDAMENTAL PROJECT:**

**PROJECT PHASE 02.**

**TOPIC:**

**TYPING MASTER( TYPING SPEED INCREACER)**

#include <iostream>

#include <vector>

#include <string>

#include <iomanip>

#include <cstdlib>

#include <chrono>

using namespace std;

using namespace chrono;

string getRandomWord() {

vector<string> words = {"apple", "programming", "speed", "accuracy", "challenge", "keyboard", "computer", "coding", "project"};

int index = rand() % words.size();

return words[index];

}

int main() {

srand(time(0));

cout << "Welcome to AREEHA'S TYPING MASTER (Typing Speed Increaser)!" << endl;

cout << "You will be given 5 random words to type. Let's see how fast and accurate you are!" << endl;

int rounds = 5;

int correctCount = 0;

double totalTime = 0.0;

for (int i = 1; i <= rounds; i++) {

string randomWord = getRandomWord();

cout << "\nRound " << i << ": Type this word: " << randomWord << endl;

auto startTime = high\_resolution\_clock::now();

string userInput;

cout << "Your input: ";

cin >> userInput;

auto endTime = high\_resolution\_clock::now();

duration<double> elapsedTime = endTime - startTime;

if (userInput == randomWord) {

cout << "Correct!" << endl;

correctCount++;

} else {

cout << "Incorrect! The correct word was: " << randomWord << endl;

}

totalTime += elapsedTime.count();

cout << "Time taken: " << fixed << setprecision(2) << elapsedTime.count() << " seconds\n";

}

double accuracy = (double(correctCount) / rounds) \* 100;

double wordsPerMinute = (rounds / totalTime) \* 60;

cout << "\n--- Results ---" << endl;

cout << "Correct words: " << correctCount << "/" << rounds << endl;

cout << "Accuracy: " << fixed << setprecision(2) << accuracy << "%" << endl;

cout << "Typing Speed: " << fixed << setprecision(2) << wordsPerMinute << " WPM (Words Per Minute)" << endl;

cout << "Thank you for playing!" << endl;

return 0;

}

**Code Explanation:**

**Code Breakdown**

**Header Files**

#include <iostream>

#include <vector>

#include <string>

#include <iomanip>

#include <cstdlib>

#include <chrono>

1. **#include <iostream>**
   * Used for input (cin) and output (cout) operations.
2. **#include <vector>**
   * Used to create dynamic arrays (vectors), which we use to store a list of words.
3. **#include <string>**
   * Provides the string type to work with text.
4. **#include <iomanip>**
   * Used for formatting output, such as limiting decimal places with setprecision.
5. **#include <cstdlib>**
   * Includes the rand() and srand() functions to generate random numbers.
6. **#include <chrono>**
   * Provides tools for high-precision timing, such as measuring how long the user takes to type a word.

**Using Namespaces**

using namespace std;

using namespace chrono;

1. **using namespace std;**
   * Avoids the need to prefix standard library components (like std::cout) with std::.
2. **using namespace chrono;**
   * Simplifies access to chrono classes like high\_resolution\_clock and duration.

**Function to Generate Random Words**

string getRandomWord() {

vector<string> words = {"apple", "programming", "speed", "accuracy", "challenge", "keyboard", "computer", "coding", "project"};

int index = rand() % words.size(); // Get a random index

return words[index];

}

1. **vector<string> words**
   * Creates a list of predefined words that users will type.
2. **rand() % words.size()**
   * Generates a random index (0 to the size of the list minus 1).
   * rand() generates a random number, and % takes the remainder when divided by the size of the list.
3. **return words[index];**
   * Returns a random word from the list.

**Main Function**

int main() {

1. **int main()**
   * Entry point of the program where execution begins.

**Random Seed Initialization**

srand(time(0));

1. **srand(time(0));**
   * Seeds the random number generator with the current time, ensuring a new sequence of random numbers each time the program runs.

**Welcome Message**

cout << "Welcome to the Typing Speed Increaser!" << endl;

cout << "You will be given 5 random words to type. Let's see how fast and accurate you are!" << endl;

1. **cout**
   * Prints messages to the console.
2. **endl**
   * Ends the current line and moves to the next.

**Initialize Variables**

int rounds = 5;

int correctCount = 0;

double totalTime = 0.0;

1. **int rounds = 5;**
   * Number of rounds (how many words the user will type).
2. **int correctCount = 0;**
   * Keeps track of how many words the user types correctly.
3. **double totalTime = 0.0;**
   * Accumulates the total time taken across all rounds.

**Main Loop**

for (int i = 1; i <= rounds; i++) {

1. **for (int i = 1; i <= rounds; i++)**
   * Loops through 5 rounds. i starts at 1 and increments by 1 after each round until it reaches rounds.

**Display Random Word**

string randomWord = getRandomWord();

cout << "\nRound " << i << ": Type this word: " << randomWord << endl;

1. **string randomWord = getRandomWord();**
   * Calls the getRandomWord() function to get a random word for this round.
2. **cout << "Round " << i << ": Type this word: " << randomWord;**
   * Displays the round number and the word the user needs to type.

**Start Timer**

auto startTime = high\_resolution\_clock::now();

1. **auto startTime = high\_resolution\_clock::now();**
   * Records the current time using chrono. This is the starting point to measure typing duration.

**Get User Input**

string userInput;

cout << "Your input: ";

cin >> userInput;

1. **string userInput;**
   * Declares a string to store what the user types.
2. **cin >> userInput;**
   * Reads the user's input.

**Stop Timer**

auto endTime = high\_resolution\_clock::now();

duration<double> elapsedTime = endTime - startTime;

1. **auto endTime = high\_resolution\_clock::now();**
   * Records the time when the user finishes typing.
2. **duration<double> elapsedTime = endTime - startTime;**
   * Calculates the total time taken by subtracting the start time from the end time.
   * The result is stored as a duration<double> in seconds.

**Check User's Input**

if (userInput == randomWord) {

cout << "Correct!" << endl;

correctCount++;

} else {

cout << "Incorrect! The correct word was: " << randomWord << endl;

}

1. **if (userInput == randomWord)**
   * Compares the user's input with the correct word. If they match, the user typed correctly.
2. **correctCount++;**
   * Increments the count of correct words if the user was correct.

**Add Time to Total**

totalTime += elapsedTime.count();

cout << "Time taken: " << fixed << setprecision(2) << elapsedTime.count() << " seconds\n";

1. **totalTime += elapsedTime.count();**
   * Adds the elapsed time for this round to the total time.
2. **setprecision(2)**
   * Limits the output to 2 decimal places for better readability.

**Calculate and Display Results**

double accuracy = (double(correctCount) / rounds) \* 100;

double wordsPerMinute = (rounds / totalTime) \* 60;

cout << "\n--- Results ---" << endl;

cout << "Correct words: " << correctCount << "/" << rounds << endl;

cout << "Accuracy: " << fixed << setprecision(2) << accuracy << "%" << endl;

cout << "Typing Speed: " << fixed << setprecision(2) << wordsPerMinute << " WPM (Words Per Minute)" << endl;

1. **accuracy**
   * Calculates typing accuracy as (correct words / total rounds) \* 100.
2. **wordsPerMinute**
   * Calculates typing speed in Words Per Minute as (total words / total time in seconds) \* 60.
3. **Display Results:**
   * Prints the number of correct words, accuracy, and typing speed.

**Final Step: Program Ends**

return 0;

1. **return 0;**
   * Indicates the program executed successfully.