A PROJECT REPORT

“Project Nokia In C”

Submitted by:

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A Project Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science of the Bangladesh University of Business and Technology (BUBT)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

BANGLADESH UNIVERSITY OF BUSINESS AND TECHNOLOGY (BUBT)

DHAKA-BANGLADESH

6 June, 2024

DECLARATION

I hereby declare that the project entitled “Project Nokia In C” submitted for the degree of Bachelor of Science Engineering in Computer Science and Engineering in the faculty of Computer Science and Engineering of Bangladesh University of Business and Technology (BUBT), is our original work and that it contains no material which has been accepted for the award to the candidates of any other degree or diploma, except where due reference is made in the next of the project to the best of our knowledge, it contains no materials previously published or written by any other person except where due reference is made in this project.

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APPROVAL

This project “Project Nokia In C” report submitted by Prottoy Vhattacharyya, Sanjid Hossain Joy, Rifa Sanjida and MD. Shakibur Hasan Turjo, students of Department of Computer Science and Engineering, Bangladesh University of Business and Technology (BUBT), under the supervision of Shamin Ahmed, Assistant Professor, Department of Computer Science and Engineering has been accepted as satisfactory for the partial requirements for the degree of Bachelor of Science Engineering in Computer Science and Engineering.

Shamin Ahmed
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ACKNOWLEDGEMENTS

I would like to thank the following people for their help in the production of this project:

Shamim Ahmed, project supervisor for all of his ongoing assistance with the project, without whose help and support throughout, this project would not have been possible.

I would also like to thank to all the group members for their assistance and hard work.

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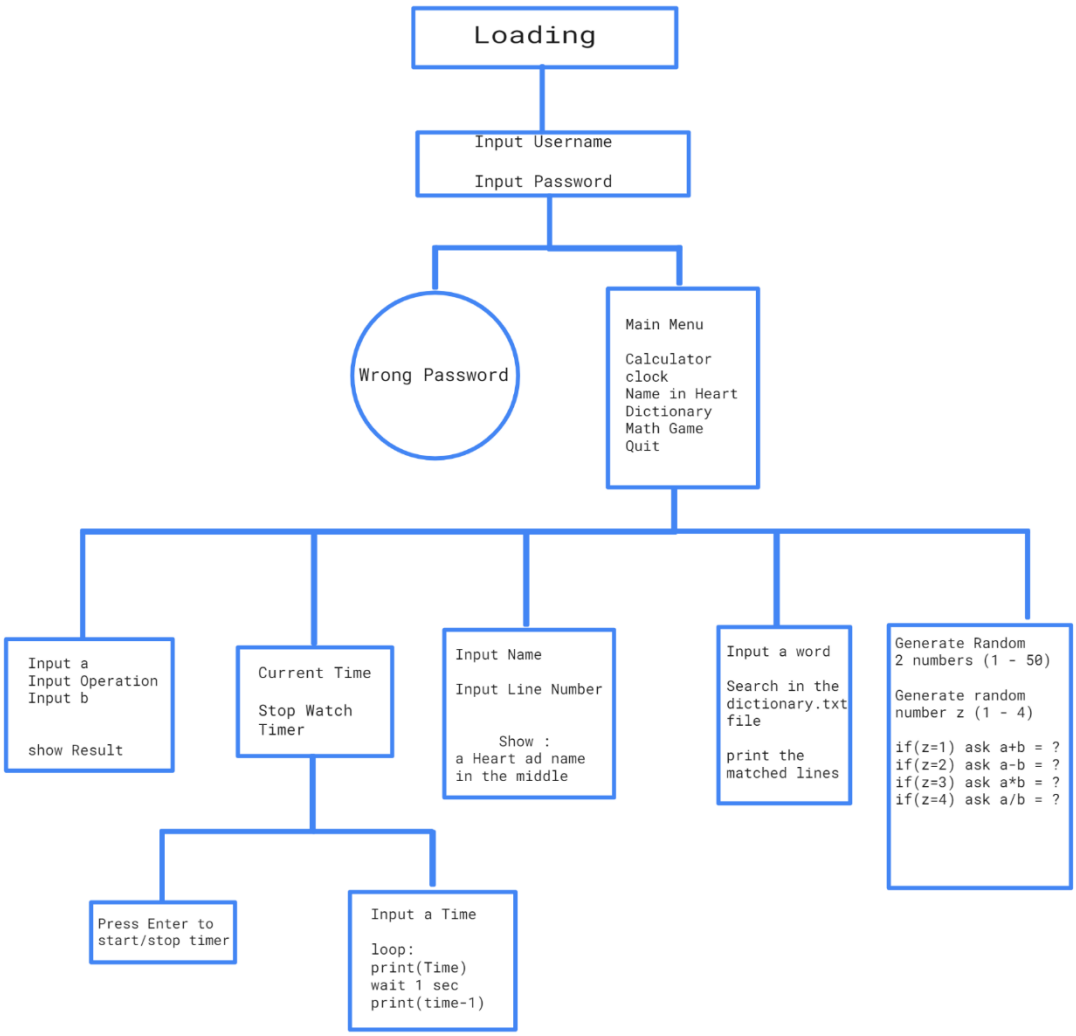
CHAPTER 1

INTRODUCTION

1.1 Project Overview:

This project comes with various features. At first it asks for a password and if right password entered it will go to the main menu where the user can use calculator, Dictionary, play a Math Game, Basic Clock Functions like Current date and time, stop watch and so on.



1.2 Problems:

I. The main problem of this project is that it's text color feature only works on windows operating system but not on Linux.
II. It takes 10 to 15 seconds to compile and run the program.

We hope all those problems will be resolved after Open Sourcing this project.

CHAPTER 2

RECUIRMENTS

2.1 Operating System:

The project will best work on **Windows** Operating System.

2.2 Compiler:

The main code of this project is written in C language. So the user need an GCC

(Global Code Compiler)

2.3 Required Files:

The user needs to download the Dictionary.txt file to use the dictionary feature.

CHAPTER 3

SYSTEM ANALYSIS AND DESIGN

3.1 Loading Function:

```c
void loading()
{
    system("clear");
    system("cls");
    printf("Loading...");
    for (int i = 0; i < 3; i++)
    {
        printf(" . ");
        fflush(stdout);
        sleep(1);
    }
}
```

- System(“clear”) clears the screen
- Sleep(1) stops the program for 1 second.

3.2 Password:

```
1  void password()
2  {
3      system("clear");
4      system("cls");
5      system("Color 0E");
6      char name[50], pass[50];
7      printf("Username: ");
8      gets(name);
9      printf("Password: ");
10     gets(pass);
11     if (strcmp(name, "pro") == 0 && strcmp(pass, "pro123") == 0)
12    {
13         menu();
14    }
15     else
16    {
17         error();
18    }
19 }
```

- System(“clear”) clears the screen
- System(“color 0E”) set the color text color to yellow.
- Gets() function inputs the username and password.
- Strcmp() compares if 2 strings are same or not.

3.3 Error:

```
1  void error()
2  {
3      system("clear");
4      system("cls");
5      system("Color 0C");
6      printf("wrong password\n");
7      printf("Try again\n");
8      for (int i = 3; i > 0; i--)
9     {
10         printf("%d....", i);
11         fflush(stdout);
12         sleep(1);
13     }
14     password();
15 }
```

- System(“clear”) clears the screen
- System(“color 0C”) set the color text color to red.
- Printf(“… “) prints the error massage.
- Sleep(1) stops the program for 1 sec.
- Password() go to the password function defined earlier.

3.4 Main Menu:

```c
void menu()
{
    int choice;
    system("clear");
    system("cls");
    system("Color 0A");
    printf("Main Menu\n\n");
    printf("1.calculator\n");
    printf("2.Clock\n");
    printf("3.Name in Heart\n");
    printf("4.Dictionary\n");
    printf("5.Math Game\n");
    printf("0.Quit\n\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);
    switch (choice)
   {
    case 1:
        calculator();
        break;
    case 2:
        clk();
        break;
    case 3:
        nameHeart();
        break;
    case 4:
        dictionary();
        break;
    case 5:
        mathGame();
        break;
    case 0:
        quit();
    default:
        printf("wrong choice");
        sleep(2);
        menu();
   }
}
```

- System(“clear”) clears the screen
- System(“color 0A”) set the color text color to Green.
- Printf(…) prints all the necessary items
- Scanf(“%d”,&choice) input a number
- Switch(choice) run different functions for different numbers.

3.4.1 Calculator:

```c
void calculator()
{
    system("clear");
    system("cls");
    clear();
    system("Color 0E");
    printf("Calculator\n\n");
    double a, c;
    char op;
    while ((scanf("%lf %c %lf", &a, &op, &c))!=0){
        switch(op){
            case '+': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, a+c); break;
            case '-': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, a-c); break;
            case '*': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, a*c); break;
            case '/': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, a/c); break;
            case '%': printf("%.2lf %c %.2lf = %d\n",a,
op,c, (int)((int)a%(int)c)); break;
            case '^': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, pow(a,c)); break;
            case 'p': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, (tgamma(a+1))/(tgamma(a-c+1)*tgamma(c+1)));
break;
            case 'c': printf("%.2lf %c %.2lf = %.2lf
\n",a,op,c, (tgamma(a+1))/(tgamma(a-c+1))); break;
            case '!': printf("%.2lf %c = %.2lf\n",a,op,
(tgamma(a+1))); break;
            default: printf("Invalid operator\n");
        }
    }
    int choich;
    printf("\n\n1.again\n0.menu\n");
    clear();
    scanf("%d", &choich);
    switch (choich)
    {
    case 1:
        calculator();
    case 0:
        menu();
    }
}
```

- System(“clear”) clears the screen
- System(“color 0E”) set the color text color to yellow.
- Scanf () to input 2 numbers and a character
- Switch() to output different operations for different characters
- Tgamma() function to get factorial a number.

3.4.2 Clock:

```c
void clk()
{
    system("clear");
    system("cls");
    system("Color 0B");
    // date and time
    time_t t;
    time(&t);
    printf("%s", ctime(&t));
    printf("\n\n");
    printf("1.stop Watch\n");
    printf("2.Timer\n");
    printf("0.Menu\n\n");
    int choice;
    scanf("%d", &choice);
    switch (choice)
   {
    case 1:
        stopWatch();
        break;
    case 2:
        timer();
        break;
    case 0:
        menu();
        break;
   }
}
```

- Printf(%s”,ctime(&t)) prints the current date and time as a string.
- Scanf() function to input a number that runs the stopwatch() or the timer() function.

stopWatch() function:

```
1  void stopWatch()
2  {
3      system("clear");
4      system("cls");
5      clear();
6      char input;
7      int run = 0;
8      double start, stop;
9      printf("press enter to start/stop the timer\nAnd
   0 to go back\n");
10     while (1)
11     {
12
13         input = getchar();
14         if (input == '\n' && run == 0)
15         {
16             printf("timer started...");
17             start = clock() / (double)CLOCKS_PER_SEC;
18             run = 1;
19         }
20         else if (input == '\n' && run == 1)
21         {
22             stop = clock() / (double)CLOCKS_PER_SEC;
23             printf("timer stoped\n");
24             printf("%lf seconds\n", (stop - start));
25             run = 0;
26         }
27         else if (input == '0')
28             break;
29     }
30     clk();
31 }
```

- While(1) infinite loop
- if (input == '\n' && run == 0) if user press enter
- start = clock() / CLOCKS_PER_SEC store the current time in start variable.
- stop = clock() / CLOCKS_PER_SEC store the current time in stop variable.
- (stop – start) show the difference of time

Timer Function:

```c
void timer()
{
    system("clear");
    system("cls");
    clear();
    int end;
    printf("input time in seconds :");
    scanf("%d", &end);
    for (int i = end; i >= 0; i--)
    {
        printf("%d ", i);
        sleep(1);
    }
    printf("\n%d seconds has passed\n", end);
    printf("\n1.reset\n0.go back");
    int choice;
    scanf("%d", &choice);
    switch (choice)
    {
    case 1:
        timer();
    case 0:
        clk();
    }
}
```

- Scanf() function to input a number.
- For() loop from input number to 0.
- Printf("…") to print I variable from the loop.
- Sleep(1) to wait for 1 second

3.4.3 Name in Heart:

```
4   void nameHeart()
5   {
6       system("clear");
7       system("cls");
8       clear();
9       system("Color 0D");
10      printf("Name Heart\n\n");
11      int i, j, n;
12      char name[50];
13      int len;
14
15      printf("Enter your name: ");
16      gets(name);
17
18      printf("Enter value of n : ");
19      scanf("%d", &n);
20      len = strlen(name);
21      for (i = n / 2; i <= n; i += 2)
22      {
23          for (j = 1; j < n - i; j += 2)
24          {
25              printf(" ");
26          }
27
28          for (j = 1; j <= i; j++)
29          {
30              printf("*");
31          }
32
33          for (j = 1; j <= n - i; j++)
34          {
35              printf(" ");
36          }
37
38          for (j = 1; j <= i; j++)
39          {
40              printf("*");
41          }
```

```
42
43          printf("\n");
44      }
45      for (i = n; i >= 1; i--)
46      {
47          for (j = i; j < n; j++)
48          {
49              printf(" ");
50          }
51          if (i == n)
52          {
53              for (j = 1; j <= (n * 2 - len) / 2; j++)
54              {
55                  printf("*");
56              }
57
58              printf("%s", name);
59
60              for (j = 1; j < (n * 2 - len) / 2; j++)
61              {
62                  printf("*");
63              }
64          }
65          else
66          {
67              for (j = 1; j <= (i * 2) - 1; j++)
68              {
69                  printf("*");
70              }
71          }
72
73          printf("\n");
74      }
75      int choich;
76      printf("\n\n1.again\n0.menu\n");
77      scanf("%d", &choich);
78      switch (choich)
79      {
80      case 1:
```

```
81          nameHeart();
82      case 0:
83          menu();
84      }
85  }
```

- System("clear") to erase the texts of the screen
- An algorithm to print a Heart Shape and a name in the middle.
- Lastly input a number either to recursive call or to run the menu() function.

3.4.4 Dictionary:

```
void dictionary()
{
    clear();
    system("clear");
    system("cls");
    system("Color 0C");
    int MAX_LINE_LENGTH = 256;
    FILE *file;
    char filename[MAX_LINE_LENGTH];
    char word[MAX_LINE_LENGTH];
    char line[MAX_LINE_LENGTH];

    // Get word to search from user
    printf("Enter the word to search: ");
    if (scanf("%s", word) != 1)
    {
        printf("Error reading word.\n");
        sleep(2);
        dictionary();
    }

    // Open the file for reading
    file = fopen("C:/Users/User/Desktop/pro/dictionary.txt",
"r");

    if (file == NULL)
```

```
    {
        printf("Error opening file: %s\n", filename);
        sleep(2);
        dictionary();
    }

    // Read the file line by line
    while (fgets(line, MAX_LINE_LENGTH, file))
    {
        // Remove trailing newline (if present)
        line[strcspn(line, "\n")] = '\0';

        // Check if the word is present in the line
        if (strstr(line, word) != NULL)
        {
            printf("%s\n", line);
            // break;
            // Print only the first occurrence (optional)
        }
    }
    // Close the file
    fclose(file);
    int choice;
    printf("\n\n1.search again: ");
    printf("\n0.menu\n");
    scanf("%d", &choice);
    switch (choice)
    {
    case 1:
        dictionary();
    case 0:
        menu();
    }
}
```

- if (scanf("%s", word) != 1) read the user input word
- file = fopen("C:/Users/User/Desktop/pro/dictionary.txt", "r"); open the dictionary.txt file
- while (fgets(line, MAX_LINE_LENGTH, file)) loop assigning every 256 character from the file in the line string
- if (strstr(line, word) != NULL) it will check if that line contains any substring that matches the user input.
- printf("%s\n", line); prints the line string

3.4.5 Math Game:

```
4    void mathGame()
5    {
6        system("clear");
7        system("cls");
8        clear();
9        system("Color 0B");
10       printf("Math Game: \n\n");
11       int a, b, c, d, z, m, temp;
12       time_t t;
13       srand((unsigned)time(&t));
14       while (1)
15       {
16           z = rand() % 5 + 1;
17           a = rand() % 50 + 1;
18           b = rand() % 50 + 1;
19           if (a < b)
20           {
21               temp = a;
22               a = b;
23               b = temp;
24           }
25           if (z == 1)
26           {
27               c = a + b;
28               printf("%d + %d = ", a, b);
29               if (scanf("%d", &d) == 0)
30               {
```

```
31                  clear();
32                  menu();
33              }
34              else if (c == d)
35              {
36                  printf("Correct answer\n");
37              }
38              else
39              {
40                  printf("Incorrect answer\nThe answer is
    %d\n", c);
41              }
42          }
43          else if (z == 2)
44          {
45              c = a - b;
46              printf("%d - %d = ", a, b);
47              if (scanf("%d", &d) == 0)
48              {
49                  clear();
50                  menu();
51              }
52              else if (c == d)
53              {
54                  printf("Correct answer\n");
55              }
56              else
57              {
58                  printf("Incorrect answer\nThe answer is
    %d\n", c);
59              }
60          }
61          else if (z == 3)
62          {
63              c = a * b;
64              printf("%d * %d = ", a, b);
65              if (scanf("%d", &d) == 0)
66              {
67                  clear();
```

```
68                  menu();
69              }
70              else if (c == d)
71              {
72                  printf("Correct answer\n");
73              }
74              else
75              {
76                  printf("Incorrect answer\nThe answer is
    %d\n", c);
77              }
78          }
79          else if (z == 4)
80          {
81              if (a % b != 0)
82              {
83                  m = a % b;
84                  a -= m;
85              }
86              c = a / b;
87              printf("%d / %d = ", a, b);
88              if (scanf("%d", &d) == 0)
89              {
90                  clear();
91                  menu();
92              }
93              else if (c == d)
94              {
95                  printf("Correct answer\n");
96              }
97              else
98              {
99                  printf("Incorrect answer\nThe answer is
    %d\n", c);
100             }
101         }
102     }
103 }
```

- srand((unsigned)time(&t)); generate different random numbers at different times
- z = rand() % 5 + 1;
- a = rand() % 50 + 1;
- b = rand() % 50 + 1; generate random numbers from 1 to 50 for a and b
- And random number from 1 to 4 for z
- If z is 1 it prints the random a and b and ask for their addition
- If z is 2 it prints the random a and b and ask for their subtraction
- If z is 3 it prints the random a and b and ask for their multiplication
- If z is 4 it prints the random a and b and ask for their Division

3.4.6 Quit:

```c
void quit(){
    system("clear");
    system("cls");
    printf("========Successfully Exited========\n");
    exit(0);
}
```

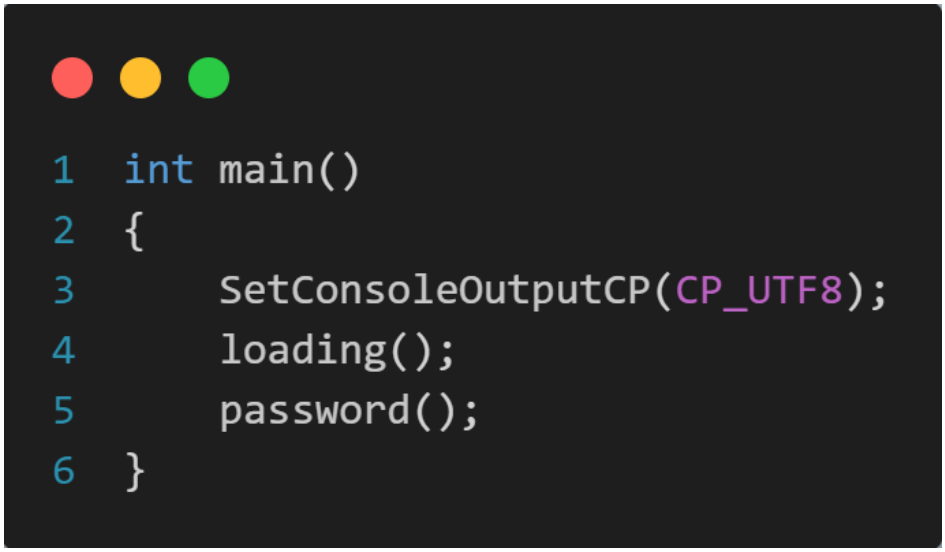
- Exit(0) to exit from the program without showing any errors.

3.5 Clear input Buffer:

```c
void clear(void)
{
      // clear input buffer
     fflush(stdin);
}
```

- fflush(stdin); to clear the input buffer which takes the last pressed enter as a “\n” new line character and assign it to the next variable.

3.6 Code page:



```
1  int main()
2  {
3      SetConsoleOutputCP(CP_UTF8);
4      loading();
5      password();
6  }
```

- setConsoleOutputCP(CP_UTF8); this will set the code page of the terminal at 650001 (Unicode) to support Bangla fonts.

CHAPTER 4

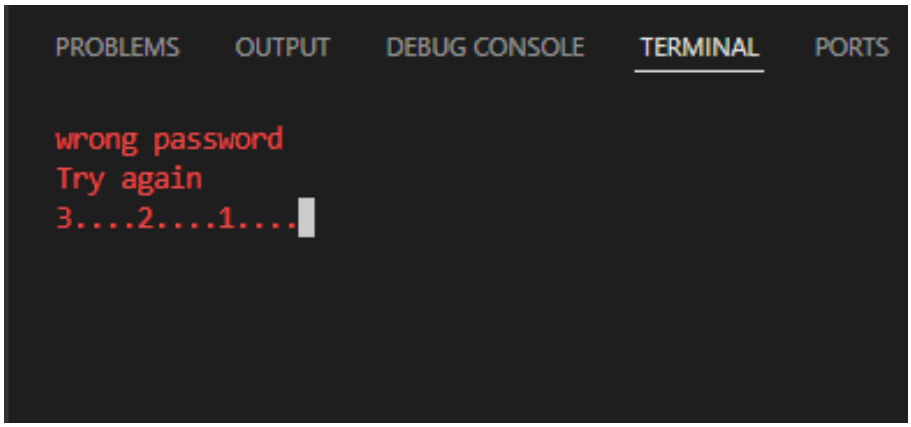
OUTPUT

4.1 Project Screen Shots:

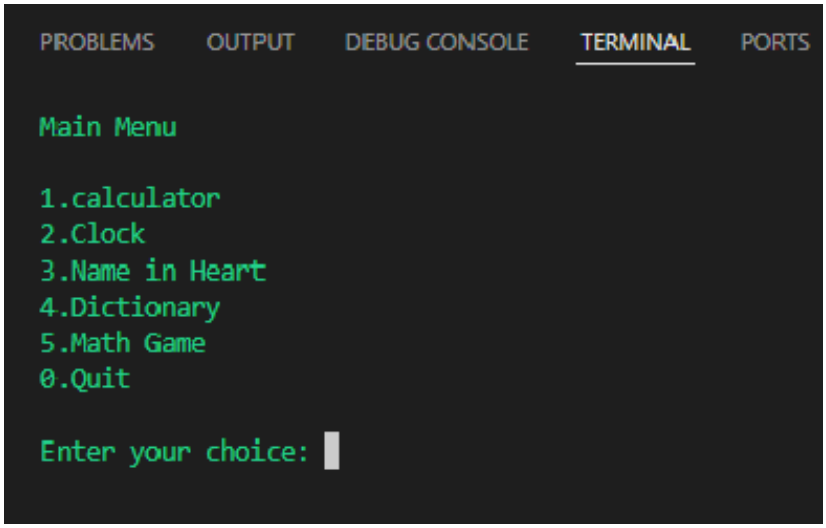
loading Page:

Password Page:

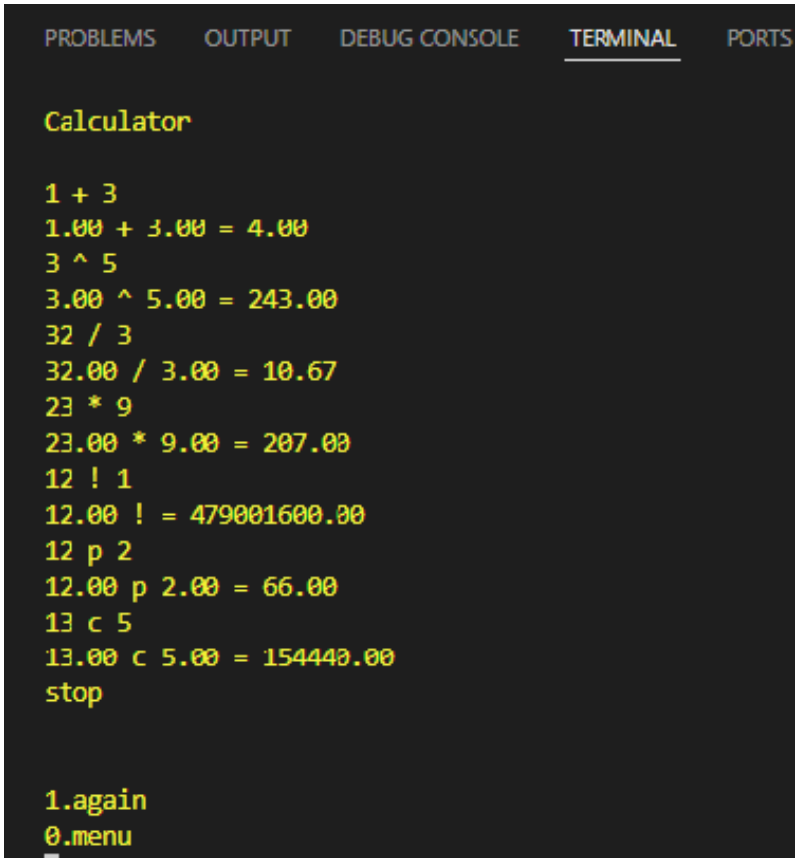
Show wrong password if username or password is incorrect



Main Menu:

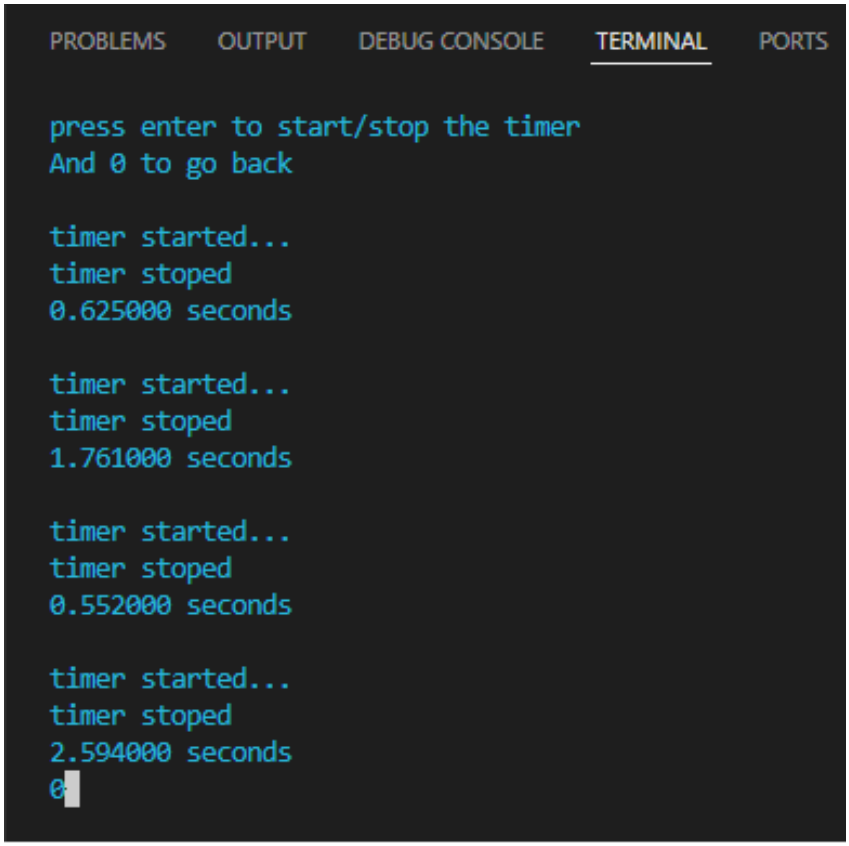


1. Calculator:

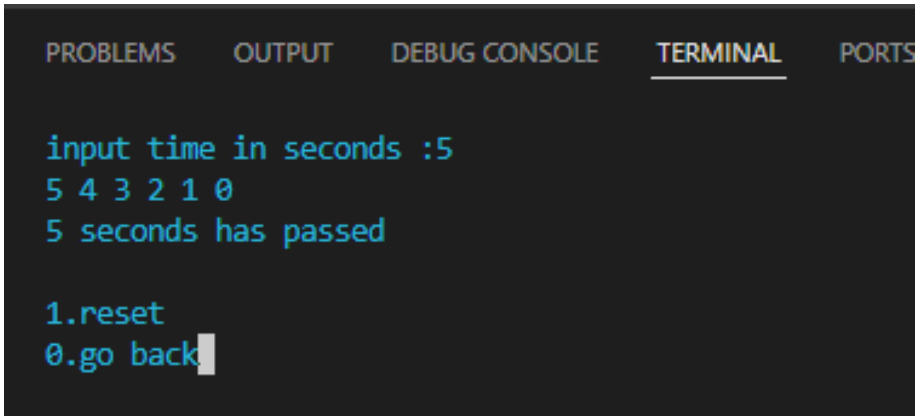


2. Clock:

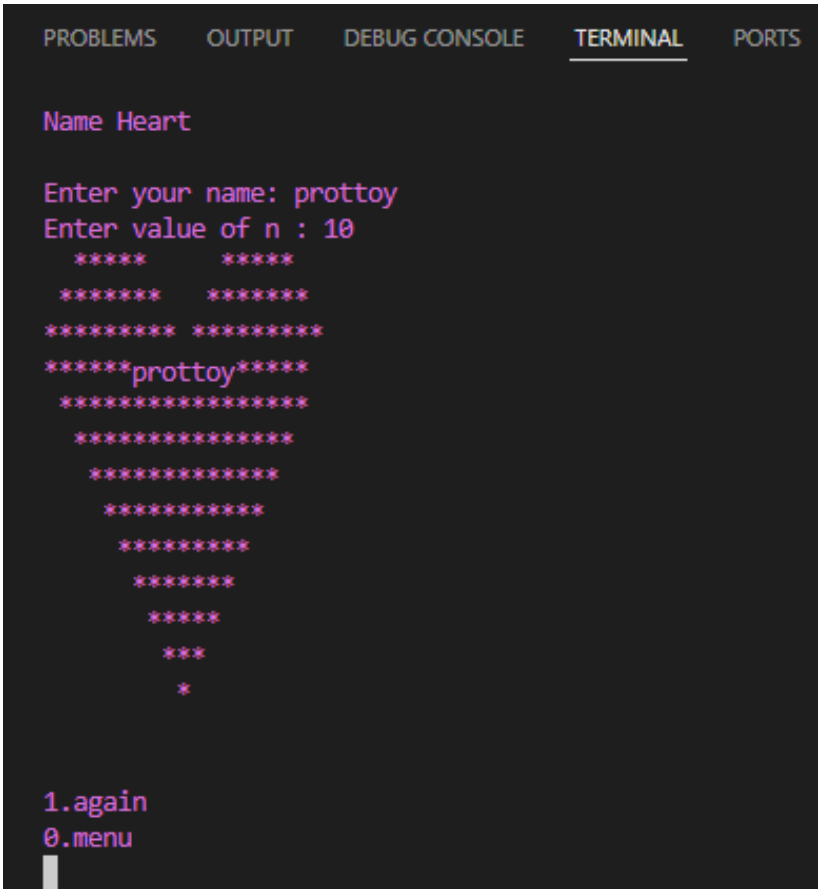
1.Stop Watch – Press enter to start or stop the timer



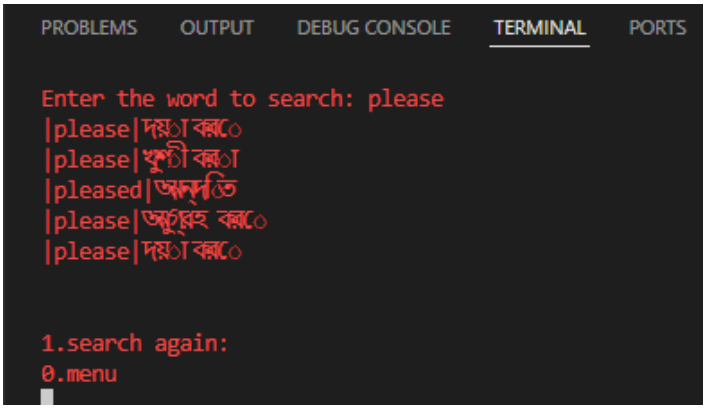
2. Timer:



3. Name in Heart:

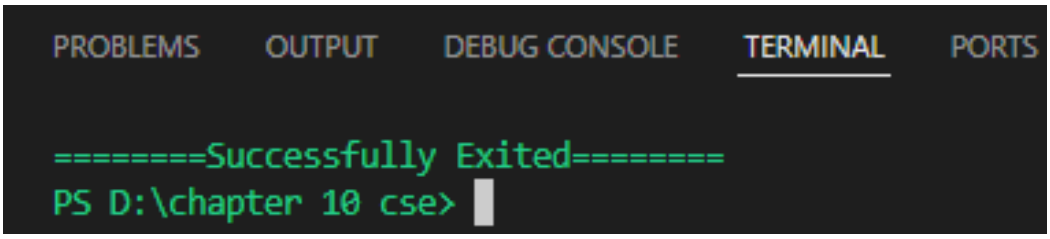


4. Dictionary:



5. Math Game:

0. Exit:



CHAPTER 5

FUTURE PLANS

5.1 Open sourcing:

I think open sourcing our code is a great thing. GitHub is a great website for open source codes. This will be uploaded to GitHub and with the help of vast programming community the bugs will gone. Furthermore, new features will be added.

5.2 References:

1. https://stackoverflow.com/
2. https://www.geeksforgeeks.org/
3. https://codeforwin.org/