Mini Project Report

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JEE Management Interface
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Objective

- The objective of the given program is to make a candidate management interface for the authorities. Through this program NTA or the JEE conducting authorites will easily manage the data and selection procedure.

- Our main focus is design a unique candidate management System that will improve Data maagement in Exam conduction and enhance experience for both Students and the Adminstartion authorities

- Various funtions are designed in the program which caters to a specific task

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Overview

- The complete project is written in c language and contains 10 functions, also it uses various c concepts like file handling,structures etc to enhance the working of the program
- For profiling task gprof tool was used.
- For Debugging purpose
- For report creation of the mini project latex is used.

Functions Description

This program contains 10 functions and each function perform a specific task

1. take candidate info
2. percentile calculator
3. JEE log
4. find candidate
5. total
6. advance qualification
7. modify
8. main
9. display
10. record the entry

1.take candidate info():

Function to add the candidates along with all thier details It takes different input details of the candidate
Following are the fields of details input by this function :

- name
- father name
- mother name
- roll
- chemistry marks
- physics marks
- maths marks

- jee rank
- all india rank

return type: void Arguments: Nil
time :
It uses a series scanf functions to take input from the users
Also gets function is also used to take input
It also increments the indexing variable of the array of the structure at the last

2. percentile calculator()

Program to find the percentile of the candidate
the function uses a simple algorithm which converts the rank to the percentile

return type: double Arguments: takes integer rank
time :
It takes an integer rank as input and converts it into the double percentile. So basically it takes rank and gives the percentile back.

3. JEE log()

Function for entering jee conduction details
also this function throws a brief introduction about the JEE examination.

return type: int(numbers of students enrolled) Arguments:Nil
time :
It basically takes the input of the number of the candidates appearing for jee this year and then returns it, because it is needed in the percentile calculation task and also in finding the qualification status of the JEE advance exam of that candidate.Also it gives a brief intro about the exam conduction and JEE.

4. find candidate()

Function to find the candidate by the roll number
This function will take a roll number as input and return all the details of that candidate.

return type: Void Arguments: Nil
time :
It takes the roll number of the candidate and finds out all the details of that candidate including the percentile,name,etc of that candidate

5.total() :

This is a simple program which takes three numbers as input returns their sum

return type: int Arguments: takes 3 integer inputs
time :

6. advance qualification()

This function checks the qualification status of a candidate for advance exam:
The function takes the roll number as inputs and returns advanced qualification status on the basis of category of the candidate.

return type: void Arguments: Nil
time :
Contains many conditional statements for proper checking of the category of the candidate and according cutoffs.It takes roll number of the candidate as input and returns the qualification status of that candidate for the jee advance exam.

7. modify()

Function to modify the candidate details
This function also takes roll number as inputs and is used to modify the details of that student.

return type: void Arguments: Nil
time :
Every field of the candidate details can be reassigned using this function.

8. main()

The main function is responsible for calling all the functions according to the user needs

return type: int Arguments: Nil
time :
an infinite loop is run here to continuously take inputs from the user untill the user wants also uses switch case to implemet the options given to the user for different tasks.

9. display()

Function to display the details after adding the candidate info
It is specifically designed with correct numbers of the identations to give a table like look

return type: void Arguments: Nil
time :
Displays all the info of the candidate in a eye catchy format.

10. record the entry()

The below function uses file handling
and prints the data of the candidate into a seperate text file (emp.txt)

return type: void Arguments: Nil
time :
It basically helps in keeping the record of the data and easy handling of the data using a seperate file.

Profiling Report

The profiling report of the program by the gprof is here

```
 Flat profile:

Each sample counts as 0.01 seconds.
 no time accumulated

  %   cumulative   self              self     total
 time   seconds   seconds    calls  Ts/call  Ts/call  name
  0.00      0.00     0.00        3     0.00     0.00  percentile_calculator
  0.00      0.00     0.00        1     0.00     0.00  advance_qualification
  0.00      0.00     0.00        1     0.00     0.00  display
  0.00      0.00     0.00        1     0.00     0.00  find_candidate
  0.00      0.00     0.00        1     0.00     0.00  jee_log
  0.00      0.00     0.00        1     0.00     0.00  modify
  0.00      0.00     0.00        1     0.00     0.00  record_the_entry
  0.00      0.00     0.00        1     0.00     0.00  take_candidate_info
  0.00      0.00     0.00        1     0.00     0.00  total

 %         the percentage of the total running time of the
time       program used by this function.

cumulative a running sum of the number of seconds accounted
 seconds   for by this function and those listed above it.

 self      the number of seconds accounted for by this
seconds    function alone.  This is the major sort for this
           listing.

calls      the number of times this function was invoked, if
           this function is profiled, else blank.

 self      the average number of milliseconds spent in this
ms/call    function per call, if this function is profiled,
   else blank.

 total     the average number of milliseconds spent in this
ms/call    function and its descendents per call, if this
   function is profiled, else blank.

name       the name of the function.  This is the minor sort
           for this listing. The index shows the location of
```

```
   the function in the gprof listing. If the index is
   in parenthesis it shows where it would appear in
   the gprof listing if it were to be printed.


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notice and this notice are preserved.


     Call graph (explanation follows)


granularity: each sample hit covers 4 byte(s) no time propagated

index % time    self  children    called     name
                0.00    0.00       1/3           take_candidate_info [8]
                0.00    0.00       1/3           display [3]
                0.00    0.00       1/3           main [15]
[1]      0.0    0.00    0.00       3         percentile_calculator [1]
-----------------------------------------------
                0.00    0.00       1/1           main [15]
[2]      0.0    0.00    0.00       1         advance_qualification [2]
-----------------------------------------------
                0.00    0.00       1/1           take_candidate_info [8]
[3]      0.0    0.00    0.00       1         display [3]
                0.00    0.00       1/1           total [9]
                0.00    0.00       1/3           percentile_calculator [1]
-----------------------------------------------
                0.00    0.00       1/1           main [15]
[4]      0.0    0.00    0.00       1         find_candidate [4]
-----------------------------------------------
                0.00    0.00       1/1           main [15]
[5]      0.0    0.00    0.00       1         jee_log [5]
-----------------------------------------------
                0.00    0.00       1/1           main [15]
[6]      0.0    0.00    0.00       1         modify [6]
-----------------------------------------------
                0.00    0.00       1/1           main [15]
[7]      0.0    0.00    0.00       1         record_the_entry [7]
-----------------------------------------------
                0.00    0.00       1/1           main [15]
[8]      0.0    0.00    0.00       1         take_candidate_info [8]
                0.00    0.00       1/1           display [3]
```

```
                0.00    0.00       1/3           percentile_calculator [1]
-----------------------------------------------
                0.00    0.00       1/1           display [3]
[9]      0.0    0.00    0.00       1         total [9]
-----------------------------------------------
```

This table describes the call tree of the program, and was sorted by the total amount of time spent in each function and its children.

Each entry in this table consists of several lines. The line with the index number at the left hand margin lists the current function. The lines above it list the functions that called this function, and the lines below it list the functions this one called. This line lists:

index A unique number given to each element of the table. Index numbers are sorted numerically. The index number is printed next to every function name so it is easier to look up where the function is in the table.

% time This is the percentage of the 'total' time that was spent in this function and its children. Note that due to different viewpoints, functions excluded by options, etc, these numbers will NOT add up to 100%.

self This is the total amount of time spent in this function.

children This is the total amount of time propagated into this function by its children.

called This is the number of times the function was called. If the function called itself recursively, the number only includes non-recursive calls, and is followed by a '+' and the number of recursive calls.

name The name of the current function. The index number is printed after it. If the function is a member of a cycle, the cycle number is printed between the function's name and the index number.

For the function's parents, the fields have the following meanings:

self This is the amount of time that was propagated directly from the function into this parent.

children This is the amount of time that was propagated from

the function's children into this parent.

     called This is the number of times this parent called the
function '/' the total number of times the function
was called. Recursive calls to the function are not
included in the number after the '/'.

     name This is the name of the parent. The parent's index
number is printed after it. If the parent is a
member of a cycle, the cycle number is printed between
the name and the index number.

 If the parents of the function cannot be determined, the word
 '<spontaneous>' is printed in the 'name' field, and all the other
 fields are blank.

 For the function's children, the fields have the following meanings:

     self This is the amount of time that was propagated directly
from the child into the function.

     children This is the amount of time that was propagated from the
child's children to the function.

     called This is the number of times the function called
this child '/' the total number of times the child
was called. Recursive calls by the child are not
listed in the number after the '/'.

     name This is the name of the child. The child's index
number is printed after it. If the child is a
member of a cycle, the cycle number is printed
between the name and the index number.

 If there are any cycles (circles) in the call graph, there is an
 entry for the cycle-as-a-whole. This entry shows who called the
 cycle (as parents) and the members of the cycle (as children.)
 The '+' recursive calls entry shows the number of function calls that
 were internal to the cycle, and the calls entry for each member shows,
 for that member, how many times it was called from other members of
 the cycle.

Index by function name

GDB activities

```
PS C:\Users\shash\pp_project> gdb a.exe
GNU gdb (GDB) 12.1
Copyright (C) 2022 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/license
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
Type "show copying" and "show warranty" for details.
This GDB was configured as "x86_64-w64-mingw32".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<https://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
    <http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from a.exe...
(gdb) break 395
Breakpoint 1 at 0x140002bef: file ass_1.c, line 395.
(gdb) break 404
Breakpoint 2 at 0x140002c00: file ass_1.c, line 405.
(gdb) break 414
Breakpoint 3 at 0x140002c0e: file ass_1.c, line 415.
(gdb) break 425
Breakpoint 4 at 0x140002c1c: file ass_1.c, line 426.
(gdb) break 399
Breakpoint 5 at 0x140002bf9: file ass_1.c, line 400.
(gdb) break 399
```

Figure 1: Initiating the breakpoints

H

```
(gdb) info breakpoints
Num     Type           Disp Enb Address            What
1       breakpoint     keep y   0x0000000140002bef in main at ass_1.c:395
2       breakpoint     keep y   0x0000000140002c00 in main at ass_1.c:405
3       breakpoint     keep y   0x0000000140002c0e in main at ass_1.c:415
4       breakpoint     keep y   0x0000000140002c1c in main at ass_1.c:426
5       breakpoint     keep y   0x0000000140002bf9 in main at ass_1.c:400
(gdb)
```

Figure 2: initiating the breakpoints

```
                                    3. Modify Student

                                    4. Record the recent entry into the text

                                    5. check elegibility for the jee advance

                                    6. Criterion and information

                                    7. Rank to percentile convertor

                                    8. Logout

                                    Enter Your Option :--> 1

Thread 1 hit Breakpoint 1, main () at ass_1.c:395
395                 take_candidate_info();
(gdb) watch i
Hardware watchpoint 7: i
(gdb) n
```

Figure 3: initiating the watch points

H

```
For help, type "help".
Type "apropos word" to search for commands related to "wo
Reading symbols from a.exe...
(gdb) break 415
Breakpoint 1 at 0x140002c0e: file ass_1.c, line 415.
(gdb) break 400
Breakpoint 2 at 0x140002bf9: file ass_1.c, line 400.
(gdb) break 395
Breakpoint 3 at 0x140002bef: file ass_1.c, line 395.
(gdb) break 426
Breakpoint 4 at 0x140002c1c: file ass_1.c, line 426.
(gdb) break 405
Breakpoint 5 at 0x140002c00: file ass_1.c, line 405.
(gdb) watch i
Hardware watchpoint 6: i
(gdb) watch c[i].name
Hardware watchpoint 7: c[i].name
(gdb) watch c[i].roll
Hardware watchpoint 8: c[i].roll
(gdb) watch c[i].age
Hardware watchpoint 9: c[i].age
(gdb)
```

Figure 4: listing and initiating the breakpoints
H

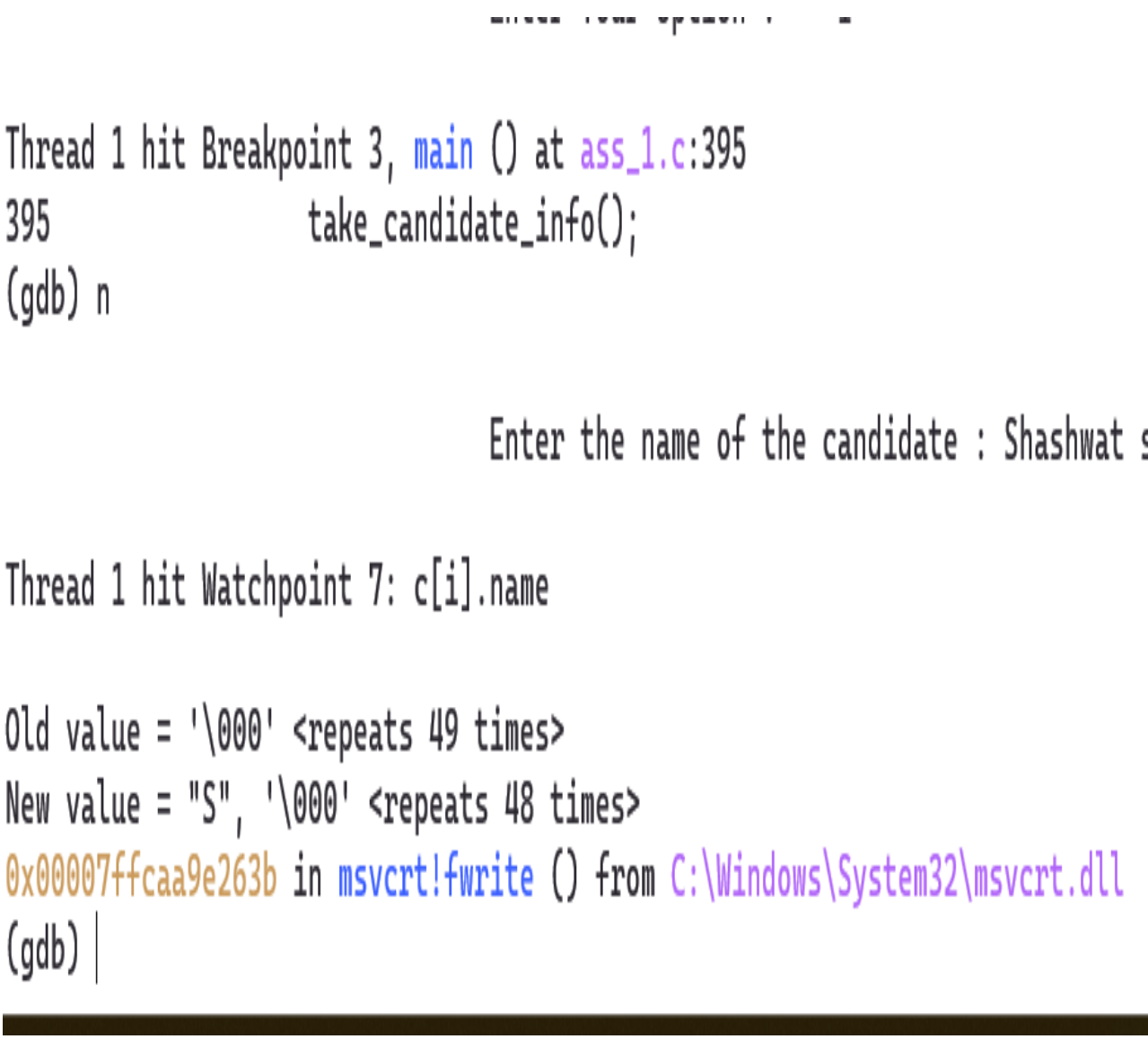

Figure 5: gdb activities

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```
Thread 1 hit Watchpoint 7: c[i].name

Old value = "Shashwat sai", '\000' <repeats 37 times>
New value = "Shashwat sai ", '\000' <repeats 36 times>
0x00007ffcaa9e263b in msvcrt!fwrite () from C:\Windows\System32\msvcrt.dll
(gdb) n
Single stepping until exit from function msvcrt!fwrite,
which has no line number information.

Thread 1 hit Watchpoint 7: c[i].name

Old value = "Shashwat sai ", '\000' <repeats 36 times>
New value = "Shashwat sai v", '\000' <repeats 35 times>
0x00007ffcaa9e263b in msvcrt!fwrite () from C:\Windows\System32\msvcrt.dll
(gdb) n
Single stepping until exit from function msvcrt!fwrite,
which has no line number information.

Thread 1 hit Watchpoint 7: c[i].name

Old value = "Shashwat sai v", '\000' <repeats 35 times>
New value = "Shashwat sai vy", '\000' <repeats 34 times>
0x00007ffcaa9e263b in msvcrt!fwrite () from C:\Windows\System32\msvcrt.dll
(gdb) n
Single stepping until exit from function msvcrt!fwrite,
which has no line number information.

Thread 1 hit Watchpoint 7: c[i].name

Old value = "Shashwat sai vy", '\000' <repeats 34 times>
New value = "Shashwat sai vya", '\000' <repeats 33 times>
0x00007ffcaa9e263b in msvcrt!fwrite () from C:\Windows\System32\msvcrt.dll
(gdb) n
Single stepping until exit from function msvcrt!fwrite,
which has no line number information.

Thread 1 hit Watchpoint 7: c[i].name

Old value = "Shashwat sai vya", '\000' <repeats 33 times>
New value = "Shashwat sai vyas", '\000' <repeats 32 times>
0x00007ffcaa9e263b in msvcrt!fwrite () from C:\Windows\System32\msvcrt.dll
(gdb)
```

Figure 6: gdb activities

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```
-
                                Enter the mother name of the candidate: RAjesh vyas

                                Enter the date of birth of the candidate in the format (date-month-year): 27-12-2003

                                Enter age: 18

Thread 1 hit Hardware watchpoint 9: c[i].age

Old value = 0
New value = 18
__mingw_sformat (s=<optimized out>, s@entry=0x77a77fe5a0, format=<optimized out>, argp=<optimized out>) at C:/M/mingw-w64-crt-git/src
t/stdio/mingw_vfscanf.c:1124
1124    C:/M/mingw-w64-crt-git/src/mingw-w64/mingw-w64-crt/stdio/mingw_vfscanf.c: No such file or directory.
(gdb)
```

Figure 7: gdb activities

H

```
|-------------------------------------------------------------------------
|       Physics           100             33                      98
|       Maths             100             33                      87
|       Chemistry         100             33                      99
|-------------------------------------------------------------------------
|                         300    |    GRAND TOTAL          283.000000
|Percentile: 97.398700
|-------------------------------------------------------------------------

Thread 1 hit Hardware watchpoint 6: i

Old value = 0
New value = 1

Thread 1 hit Watchpoint 7: c[i].name

Old value = "Shashwat sai vyas", '\000' <repeats 32 times>
New value = '\000' <repeats 49 times>

Thread 1 hit Hardware watchpoint 8: c[i].roll

Old value = 123
New value = 0

Thread 1 hit Hardware watchpoint 9: c[i].age

Old value = 18
New value = 0
take_candidate_info () at ass_1.c:99
99      }
(gdb)
```

Figure 8: gdb activities

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Source code

```
#include <stdio.h>
#include <stdlib.h>
//Global variable Declaration

int Number_of_candidates_enrolled = 0;

//i is a variable which keeps the track of number of candidates
int i = 0;//The tracking variable or the index variable.


// Structure to store the candidate's different details
struct candidate_info {
    char   name[50];
    int    roll;
    int    chem_marks;
    int    phy_marks;
    int    math_marks;
    char   father_name[20];
    char   mother_name[20];
    int    age;
    char   dob[10];
    int    category_number;
    int    all_india_rank;
    char   district[10];
    int    jee_rank;
    double percentile;
};
struct candidate_info c[50];



//All the functions are declared here so that any function can access any funcion irrespecti
void    display();
double  percentile_calculator(int rank);
int     jee_log();
void    find_candidate();
float   total(float x,float y,float z);
void    advance_qualification();
void    take_candidate_info();
void    record_the_entry();
void    take_candidate_info();
```

```
//1. Function to add the candidates along with all thier details
//It takes differnt input details of the candidate
void take_candidate_info()
{
    printf("\n\t\t\t\tEnter the name of the candidate : ");
    fflush(stdin);//It is used to avoid errors coming while taking the inputs
    gets(c[i].name);//input the name

    printf("\n\t\t\t\tEnter the father name of the candidate: ");
    fflush(stdin);
    gets(c[i].father_name);//input the father name of the candidate

    printf("\n\t\t\t\tEnter the mother name of the candidate: ");
    fflush(stdin);
    gets(c[i].mother_name);////input the mother name of the candidate

    printf("\n\t\t\t\tEnter the date of birth of the candidate in the format (date-month-yea
    fflush(stdin);
    gets(c[i].dob);//input the name date of birth of the candidate

    printf("\n\t\t\t\tEnter age: ");
    scanf("%d", &c[i].age);//input the age

    printf("\n\t\t\t\tEnter the enrollment number of the candidate starting from 1 : ");
    scanf("%d", &c[i].roll);//input the roll number of the candidate

    printf("\n\t\t\t\tEnter the chemistry marks of the candiate :");
    scanf("%d", &c[i].chem_marks);//input the chemistry marks

    printf("\n\t\t\t\tEnter the physics marks of the candiate :");
    scanf("%d", &c[i].phy_marks);//input the physics marks

    printf("\n\t\t\t\tEnter the maths marks of the candiate :");
    scanf("%d", &c[i].math_marks);//input the maths marks

    printf("\n\t\t\t\tEnter the home town:");
    scanf("%s", &c[i].district);//input the district

    printf("\n\t\t\t\tEnter the all india rank of the candidate :");
    scanf("%d", &c[i].all_india_rank);//input the all India rank

    printf("\n\t\t\t\tEnter the category of the candidate:");
    printf("\n\t\t\t\t1--->General");
```

```
    printf("\n\t\t\t\t2--->OBC");
    printf("\n\t\t\t\t3--->SC");
    printf("\n\t\t\t\t4--->ST  : ");
    scanf("%d", &c[i].category_number);//input the category
    printf("\n");
    display();//display function is called here.

    c[i].percentile = percentile_calculator(c[i].all_india_rank);
    i++; //This is a update index statement so that the information of the next candidate ge
    // c[i+1].

}




//2. A simple total function which takes 3 inputs and return the sum of all
float total(float x,float y,float z){
    float sum = x+y+z;
    return sum;
}




//3.Function to display the details after adding the candidate info
//It is specifically designed with correct numbers of the identations to give a table like l
void display(){
    printf("\n-------------------------------------------------------------------------------
    printf("|                                JOINT ENTRANCE EXAMINATION
    printf("|-------------------------------------------------------------------------------
    printf("|Name: %s\tCategory: %dth\tRoll Number: %d\n", c[i].name, c[i].category_number,
    printf("|Father name: %s\t JEE rank :%d\n", c[i].father_name,c[i].all_india_rank);
    printf("|Mother name: %s\n",  c[i].mother_name);
    printf("|Date of birth: %s\n",  c[i].dob);
    printf("|District: %s\n",  c[i].district);
    printf("|-------------------------------------------------------------------------------
    printf("|\tSUBJECTS      \tMAX MARKS\tMIN MARKS NEEDED\tTHEORY MARKS\n");
    printf("|-------------------------------------------------------------------------------
    printf("|\tPhysics      \t  100      \t   33       \t\t     %d\n",c[i].phy_marks);
    printf("|\tMaths       \t  100      \t   33       \t\t     %d\n", c[i].math_marks);
    printf("|\tChemistry      \t  100      \t   33       \t\t     %d\n", c[i].chem_marks);
    printf("|-------------------------------------------------------------------------------
    printf("|\t              \t  300    |    GRAND TOTAL\t    %f\n", total(c[i].phy_marks,c|
    printf("|Percentile: %lf\n", percentile_calculator(c[i].all_india_rank) );
    printf("|-------------------------------------------------------------------------------
```

```
}




// 4.Function to find the candidate by the roll number
//This function will take a roll number as input and return all the details of that candidat
void find_candidate()
{
    int x;
    int flag;
    int position;
    fflush(stdin);
    printf("Enter the Roll Number"
           " of the candidate\n");
    scanf("%d", &x);
    for (int j = 0; j < 50; j++)
    {
        if(x  == c[j].roll){
            flag =1;
            position = j;
        }
    }
    //The above segment finds the index variable of the array of the structure used
    //as per the roll number entered by the user

    //Below segment comes into the role after the successful indentification of the index va
    //This segments prints all the details of that candidate
    if (flag == 1){
         printf("\n\t\t\tName of the candidate is : %s",c[position].name);
         printf("\n\t\t\tFather's Name of the candidate is : %s",c[position].father_name);
         printf("\n\t\t\tMother's Name of the candidate is : %s",c[position].mother_name);
         printf("\n\t\t\tPhysics marks of the candidate are : %d",c[position].phy_marks);
         printf("\n\t\t\tMaths marks of the candidate are : %d",c[position].math_marks);
         printf("\n\t\t\tChemistry marks of the candidate are : %d ",c[position].chem_marks)
         printf("\n\t\t\tAge of the candidate is : %d ",c[position].age);
         printf("\n\t\t\tThe date of birth of the candidate is : %s",c[position].dob);
         printf("\n\t\t\tRank of the candidate is : %d",c[position].all_india_rank);
         printf("\n\t\t\tPercentile of the candidate aacording to the number is : %lf",c[pos

    }
}
```

```
//5.Function to modify the candidate details
//This function also takes roll number as inputs and is used to modify the details of that s
void modify(){
    int x;
    int flag;
    int position;
    fflush(stdin);
    printf("Enter the Roll Number of the candidate\n");
    scanf("%d", &x);
    for (int j = 0; j < 50; j++)
    {
        if(x  == c[j].roll){
            flag =1;
            position = j;
        }
    }
    //The above segment finds the index variable of the array of the structure used
    //as per the roll number entered by the user

    //Below segment comes into the role after the successful indentification of the index va
    //This segments reassigns the details of that candidate
    if (flag == 1){
    printf("\n\t\t\t\tEnter the name of the candidate : ");
    fflush(stdin);
    gets(c[position].name);
    printf("\n\t\t\t\tEnter the father name of the candidate: ");
    fflush(stdin);
    gets(c[position].father_name);
    printf("\n\t\t\t\tEnter the mother name of the candidate: ");
    fflush(stdin);
    gets(c[position].mother_name);
    printf("\n\t\t\t\tEnter the date of birth of the candidate in the format (date-month-yea
    fflush(stdin);
    gets(c[position].dob);
    printf("\n\t\t\t\tEnter age: ");
    scanf("%d", &c[position].age);
    printf("\n\t\t\t\tEnter the chemistry marks of the candiate :");
    scanf("%d", &c[position].chem_marks);
    printf("\n\t\t\t\tEnter the physics marks of the candiate :");
    scanf("%d", &c[position].phy_marks);
    printf("\n\t\t\t\tEnter the maths marks of the candiate :");
    scanf("%d", &c[position].math_marks);
    printf("\n\t\t\t\tEnter the home town:");
    scanf("%s", &c[position].district);
```

```
    printf("\n\t\t\t\tEnter the all india rank of the candidate :");
    scanf("%d", &c[position].all_india_rank);

    }

}




//6.Function for entering jee conduction details
//also this function throws a brief introduction about the JEE examination.
int jee_log(){
    printf("\n\t\t\t\tJEE or Joint Entrance Examination\n");
    printf("The Joint Entrance Examination (JEE) is an engineering entrance"
    " assessment conducted for admission to various  engineering colleges in India."
    "It is constituted by two different examinations: the JEE-Main and the JEE-Advanced.\n\n
    printf("\n\t\t\t\tEnter the number of students attempted jee this year :");
    scanf("%d",&Number_of_candidates_enrolled);
    return  Number_of_candidates_enrolled;
}




//7.This function checks the qualification for advance:
//The function takes the roll number as inputs and returns advanced qualification status on
//of the candidate.
void advance_qualification(){
    int  x;
    int  flag;  //Used to carry forward the process after the identification to the trackin
    int  position;
    fflush(stdin);
    printf("Enter the Roll Number"
           " of the candidate\n");
    scanf("%d", &x);
    for (int j = 0; j < 50; j++)
    {
        if(x  == c[j].roll){
            flag =1;
            position = j;
        }
    }
    //The above segment finds the index variable of the array of the structure used
```

```
    //as per the roll number entered by the user

    if (flag == 1)
        {printf("As per the category criteria \n");

        //checking the category of the candidate and then examining the cutoff marks for the
        //qualification as per the category.
        if(c[position].category_number ==1 ){
            printf("The candidate belong to general category \n");
            if(c[position].percentile>=90){
                printf("The candidate has qualified for jee advanced \n");
            }
        }

        else if(c[position].category_number ==2 ){
            printf("The cadidate belongs to the OBC category \n");
            if(c[position].percentile>=83){
                printf("The candidate has qualified for jee advanced \n");
            }
        }
        else if(c[position].category_number ==3 ){
            printf("The cadidate belongs to the SC category \n");
            if(c[position].percentile>=75){
                printf("The candidate has qualified for jee advanced \n");
            }
        }
        else if(c[position].category_number ==4 ){
            printf("The cadidate belongs to the ST category \n");
            if(c[position].percentile>=60){
                printf("The candidate has qualified for jee advanced \n");
            }
        }
        else{
            printf("Enter the correct category \n");
        }
    }
}




//8.Program to find the percentile of the candidate
//the function uses a simple algorithm which converts the rank to the percentile
double percentile_calculator(int rank){
```

```
    double percentile;
    if((Number_of_candidates_enrolled !=0)|| (Number_of_candidates_enrolled >= rank))
    {
        percentile = (double)(Number_of_candidates_enrolled - rank)*100/Number_of_candidates
    }
    else{
        printf("Please enter the correct number of the students attempted the exam \n");
    }
    return percentile;
}

//9.The below function uses file handling and prints the data of the candidate into a sepera
void record_the_entry(){
    FILE *fptr;
    fptr = fopen("emp.txt", "a+");/*  open for writing */
    if (fptr == NULL)
    {
        printf("File does not exists \n");
    }
    fprintf(fptr, "Id= %d\n", i);
    fprintf(fptr, "Name= %s\n", c[i-1].name);
    fprintf(fptr, "Age= %d\n", c[i-1].age);
    fprintf(fptr, "Rank= %d\n", c[i-1].all_india_rank);
    fprintf(fptr, "Percentile = %lf\n", c[i-1].percentile);
    fprintf(fptr, "dob= %d\n", c[i-1].all_india_rank);
    fprintf(fptr, "Mother name= %s\n", c[i-1].mother_name);
    fprintf(fptr, "District= %s\n", c[i-1].district);
    fprintf(fptr, "Roll number= %d\n", c[i-1].roll);
    fclose(fptr);
    printf("Data is successful is loaded \n");
}




//10.main function
int main(){
    int arbitrary_rank;
    int loop_terminater = 1;
    int option;

    //A catchy display
    printf("\n\n\t\t\t\t Joint Entrance Examination (2022)");
    printf("\n\n\t\t\t\t\t\t   NTA \n");

    // The below segment redirects the user to the jee_log function to fetch some basic data
```

```
//program running.
printf("\n\n\t\t\t\t\t   JEE Information\n");
jee_log();

//A while loop is introduced over here to basically put the program in an unending loop
//So that as far as user wants the program runs
while(loop_terminater == 1)
{
    printf("\n\n");
    printf("\n\n\t\t\t\t   Select from the given options");
    printf("\n\n\t\t\t\t1. Add Student");
    printf("\n\n\t\t\t\t2. Find the candidate by the roll number");
    printf("\n\n\t\t\t\t3. Modify Student");
    printf("\n\n\t\t\t\t4. Record the entry int the text file");
    printf("\n\n\t\t\t\t5. check elegibility for the jee advance");
    printf("\n\n\t\t\t\t6. Criterion and information");
    printf("\n\n\t\t\t\t7. Rank to percentile convertor");
    printf("\n\n\t\t\t\t8. Logout");
    printf("\n\n\t\t\t\tEnter Your Option :--> ");
    scanf("%d",&option);
    fflush(stdin);


    //Switch case is used here to give the user with various options each leading to a c
    //and ultimately to the different use and utility.
    switch (option)
    {

    //This case redirects the user to take_candidate_info function followed by the displ

    case 1:
        take_candidate_info();
        break;

    //This case redirects the user to find_candidate function
    case 2:
        find_candidate();
        break;

    //This case redirects the user to modify function
    case 3:
        modify();
        break;

    //This case redirects the user to record_the_entry function
    case 4:
```

```
            record_the_entry();
            break;

        //This case redirects the user to advance_qualification function
        case 5:
            advance_qualification();
            break;

        //This case redirects the user to jee_log function
        case 6:
            jee_log();
            break;

        //This case will take a arbitrary rank and by using the percentile_calculator functi
        //the percentile
        case 7:
            printf("Enter the rank: ");
            scanf("%d",&arbitrary_rank);
            printf("The percentile is : %lf",percentile_calculator(arbitrary_rank));

            break;
        // The objective of the loop terminater is to end the while rule and ultimately the
        case 8:
            loop_terminater = 0;
            break;


        default:
            break;
        }

    }
    return 0;
}
}
```

Output Screenshots

```
PS C:\Users\shash\pp_project> .\ass_1.exe

                                Joint Entrance Examination (2022)

                                                NTA


                                          JEE Information

                                JEE or Joint Entrance Examination
The Joint Entrance Examination (JEE) is an engineering entrance assessment conducted for admission to various  engineering colleges i
ed by two different examinations: the JEE-Main and the JEE-Advanced.


                                Enter the number of students attempted jee this year :1000000




                                   Select from the given options

                                1. Add Student

                                2. Find the candidate by the roll number

                                3. Modify Student

                                4. Record the entry int the text file

                                5. check elegibility for the jee advance

                                6. Criterion and information

                                7. Rank to percentile convertor

                                8. Logout

                                Enter Your Option :--> 1
```

Figure 9: Initial Display

```
                              Enter Your Option :--> 1

                              Enter the name of the candidate : Shashwat sai vyas

                              Enter the father name of the candidate: Nihar Vyas

                              Enter the mother name of the candidate: Rajesh Vyas

                              Enter the date of birth of the candidate in the format (date-month-year)

                              Enter age: 1

                              Enter the enrollment number of the candidate starting from 1 : 401

                              Enter the chemistry marks of the candiate :99

                              Enter the physics marks of the candiate :98

                              Enter the maths marks of the candiate :99

                              Enter the home town:Ratlam

                              Enter the all india rank of the candidate :26013

                              Enter the category of the candidate:
                              1--->General
                              2--->OBC
                              3--->SC
                              4--->ST  : 1


-------------------------------------------------------------------------------------
|                             JOINT ENTRANCE EXAMINATION                            |
|-----------------------------------------------------------------------------------|
|Name: Shashwat sai vyas        Category: 1th   Roll Number: 401
|Father name: Nihar Vyas         JEE rank :26013
|Mother name: Rajesh Vyas
|Date of birth: 27-12-2003
|District: Ratlam
|-----------------------------------------------------------------------------------|
|       SUBJECTS        MAX MARKS       MIN MARKS NEEDED        THEORY MARKS        |
|-----------------------------------------------------------------------------------|
|       Physics           100             33                      98
|       Maths             100             33                      99
|       Chemistry         100             33                      99
|-----------------------------------------------------------------------------------|
|                         300    |    GRAND TOTAL           295.000000
|Percentile: 97.398700
|-----------------------------------------------------------------------------------|
```

Figure 10: Display Function

```
                                   Select from the given options

                                1. Add Student

                                2. Find the candidate by the roll number

                                3. Modify Student

                                4. Record the entry int the text file

                                5. check elegibility for the jee advance

                                6. Criterion and information

                                7. Rank to percentile convertor

                                8. Logout

                                Enter Your Option :--> 2
Enter the Roll Number of the candidate
401

                        Name of the candidate is : Shashwat sai vyas
                        Father's Name of the candidate is : Nihar Vyas
                        Mother's Name of the candidate is : Rajesh Vyas
                        Physics marks of the candidate are : 98
                        Maths marks of the candidate are : 99
                        Chemistry marks of the candidate are : 99
                        Age of the candidate is : 18
                        The date of birth of the candidate is : 27-12-2003
                        Rank of the candidate is : 26013
                        Percentile of the candidate aacording to the number :
```

Figure 11: find candidate function

```
                                7. Rank to percentile convertor

                                8. Logout

                                Enter Your Option :--> 3
Enter the Roll Number of the candidate
401

                                Enter the name of the candidate : Shashwat sai vyas

                                Enter the father name of the candidate: Nihar Vyas

                                Enter the mother name of the candidate: Purva Vyas

                                Enter the date of birth of the candidate in the format (date-month

                                Enter age: 19

                                Enter the chemistry marks of the candiate :98

                                Enter the physics marks of the candiate :87

                                Enter the maths marks of the candiate :97

                                Enter the home town:Ujjain

                                Enter the all india rank of the candidate :12345
```

Figure 12: find candidate function

```
                                8. Logout

                                Enter Your Option :--> 2
Enter the Roll Number of the candidate
401

                        Name of the candidate is : Shashwat sai vyas
                        Father's Name of the candidate is : Nihar Vyas
                        Mother's Name of the candidate is : Purva Vyas
                        Physics marks of the candidate are : 87
                        Maths marks of the candidate are : 97
                        Chemistry marks of the candidate are : 98
                        Age of the candidate is : 19
                        The date of birth of the candidate is : 24-12-2003
                        Rank of the candidate is : 12345
                        Percentile of the candidate aacording to the number is
```

Figure 13: find candidate function

```
                                        3. Modify Student

                                        4. Record the entry int the text file

                                        5. check elegibility for the jee advance

                                        6. Criterion and information

                                        7. Rank to percentile convertor

                                        8. Logout

                                        Enter Your Option :--> 4
Data is successful is loaded



                                           Select from the given options

                                        1. Add Student
```

Figure 14: find candidate function

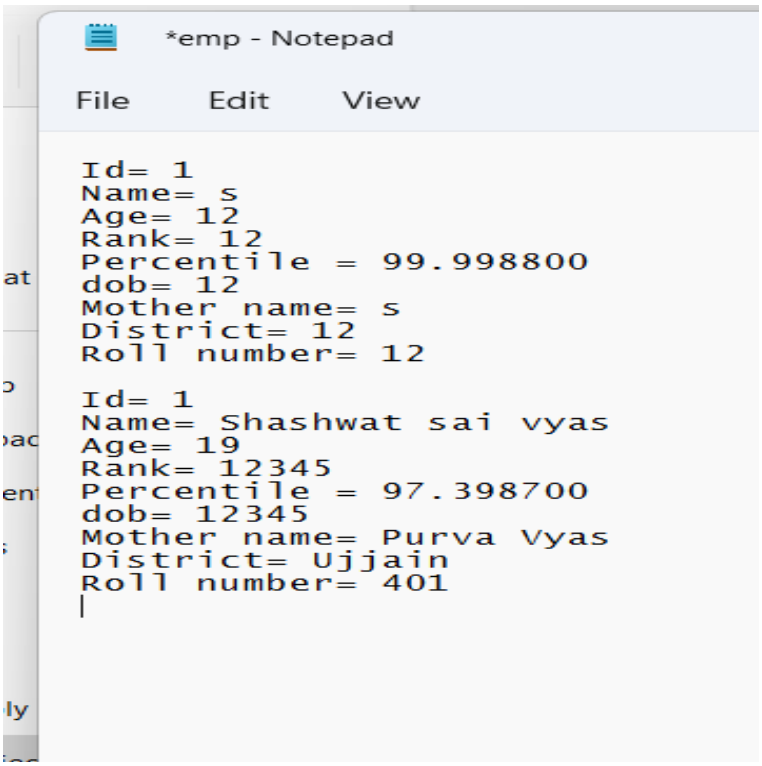

Figure 15: A text file is created having the report of previous entries

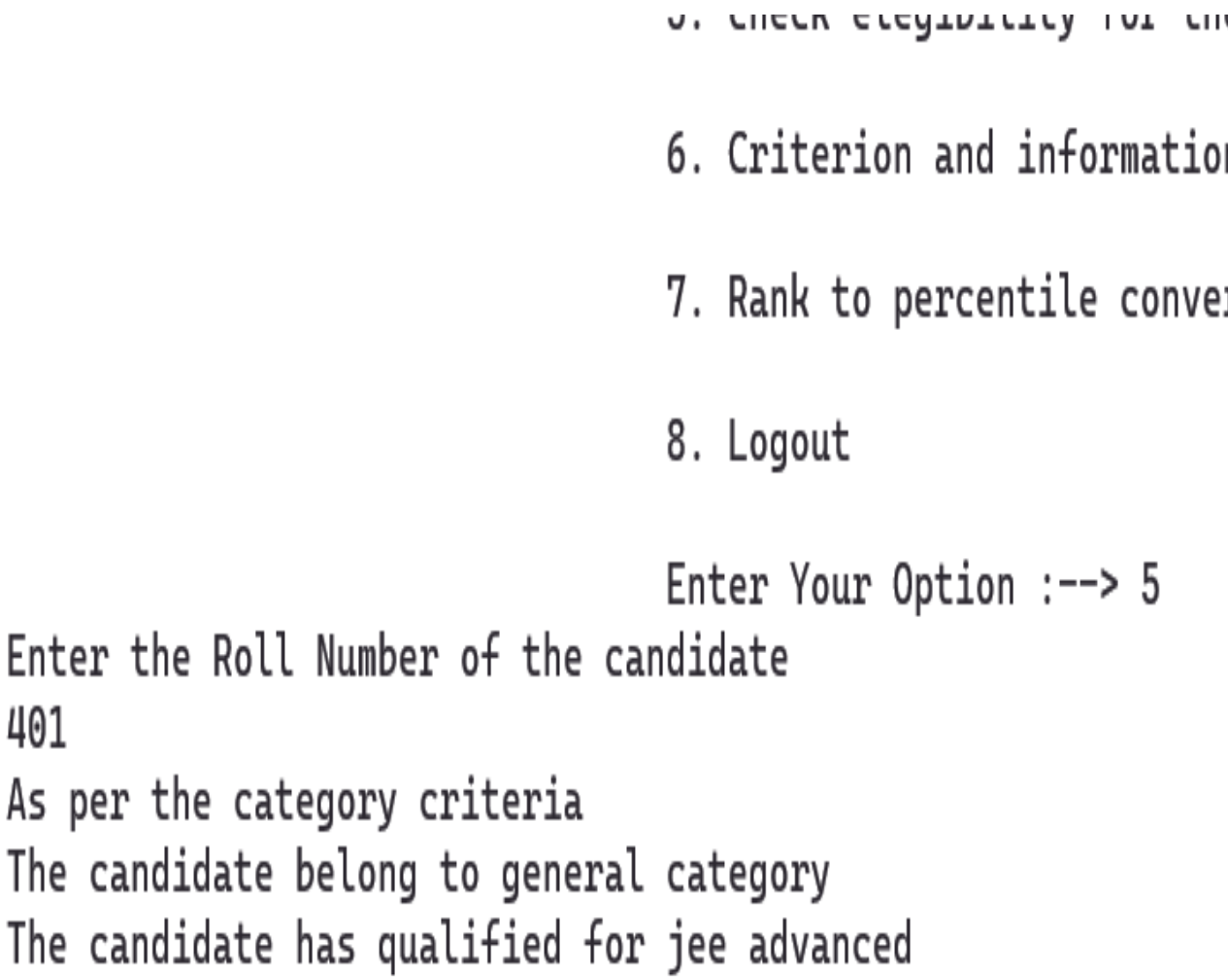

Figure 16: Using the advance qualification function
[H]

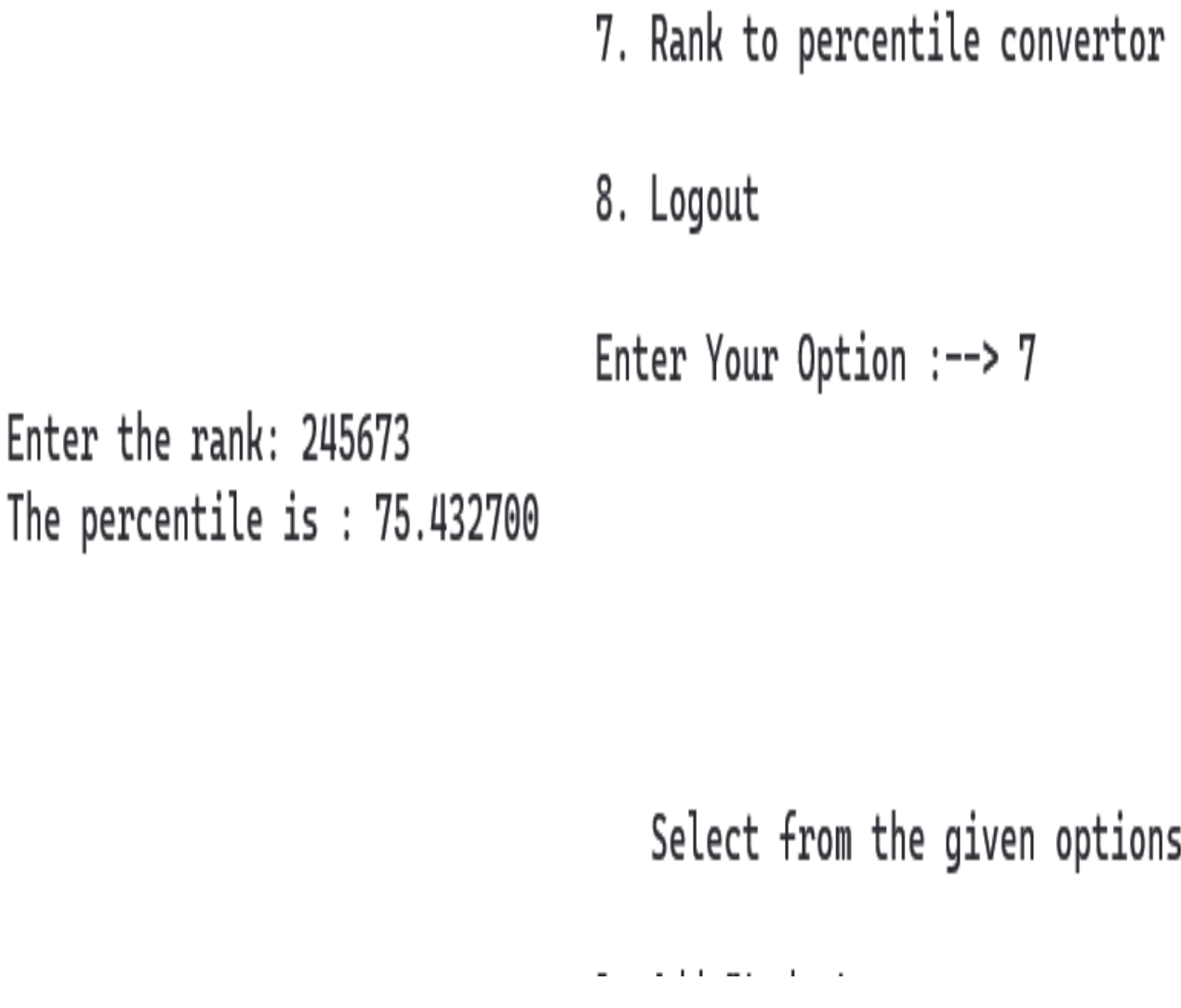

Figure 17: percentile converter in work
[H]

```
Enter the maths marks of the candiate :98

Enter the home town:Nepal

Enter the all india rank of the candidate :12345

Enter the category of the candidate:
1--->General
2--->OBC
3--->SC
4--->ST  : 1
```

```
-------------------------------------------------------------------------------
|                              JOINT ENTRANCE EXAMINATION
|------------------------------------------------------------------------------
|Name: Ajay sahni       Category: 1th   Roll Number: 123
|Father name: Anant sahni        JEE rank :12345
|Mother name: namrata sahni
|Date of birth: 25-3-2002
|District: Nepal
|------------------------------------------------------------------------------
|       SUBJECTS        MAX MARKS       MIN MARKS NEEDED        THEORY MARKS
|------------------------------------------------------------------------------
|       Physics           100             33                      99
|       Maths             100             33                      98
|       Chemistry         100             33                      98
|------------------------------------------------------------------------------
|                         300    |    GRAND TOTAL          296.000000
|Percentile: 98.765500
|------------------------------------------------------------------------------
```

Figure 18: again added a candidate information
[H]