MENTAL MATH

Introduction to Programming

Computer Science& Engineering

By

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Under the Guidance of
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ACKNOWLEDGEMENTS

First and foremost, we express our sincere thanks for the guidance and encouragement rendered by **J. Srinivas, Assistant Professor** in the Department of Computer Science & Artificial Intellegence, SR University, Ananthsagar, Hanamkonda District. We extend our gratitude for his advice and guidance during the progress of this course project.

Secondly, We express our sincere thanks to **Dr. M. Shashikala, Associate Professor & Head**, Department of CS & AI, SR University who stood as silent inspiration behind this course project. Our heartfelt thanks for her endorsement and valuable suggestions.

We wish to express our profound thanks to **Dr. R. Archana, Dean, School of Sciences** for providing necessary facilities to make this course project a success.

We thank all the members of teaching and non-teaching staff members, and also who have assisted us directly or indirectly for successful completion of this course project.

Finally, We would like to express our sincere gratitude to our parents who are constantly encouraging us through-out our lives and for completion of this course project.

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DECLARATION

We declare that the course project work entitled **"MENTAL MATH"** recorded in this course project work does not form part of any other project work. We further declare that the course project work report is based on our work carried-out at **"SR University, Ananthasagar Mandal, Hanamkonda District – 506 371"** in the first year of our B-Tech course.

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CERTIFICATE

This is to certify that the course project report entitled **MENTAL MATH** that is being submitted by **SHIVA,UMAIR,HARINI and GANESH** in partial fulfillment for the award of **B-Tech** in **Computer Science & Engineering** to the SR University, Ananthasagar, Hanmakonda-506371 is a record of bonafide work carried out by them under my guidance and supervision.

Supervisor

J. Srinivas

Head

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MENTAL MATH

ABSTRACT:

- In this paper we report on a study of the implementation of handheld game consoles (HGCs) in 10 Year four/five classrooms to develop student automaticity of mathematical calculations. The automaticity of mathematical calculations was compared for those students using the HGC and those being taught using traditional teaching methods. Over a school term, students (n=236) who used the HGCs and Dr Kawashima's Brain Training showed significant improvement in both the speed and accuracy of their mathematical calculations. Data collected in interviews during the intervention period from students, staff and parents were analysed to provide further information on the implementation and efficacy of this approach. This exploration identified that the HGCs contributed to positive learning, motivational, and efficiency outcomes. These findings highlight opportunities for using commercially available digital games to achieve classroom objectives.

Suppose you were asked what 2 + 3 is. Most likely, it wouldn't take you long to tell me that it's 5 without using a calculator or anything else to figure it out. This is called mental math, and we use it to calculate math problems in our heads without having to write anything down or use any tools to do so.There are many different ways to do mental math. For 2 + 3, it could be that you have that problem memorized, or it could be that you have a mental trick to figure out what 2 + 3 is like starting at 2 and then counting three more, or picturing 2 objects and 3 more objects then counting them all up.Whichever way you choose to do mental math, you're probably familiar with being able to add, subtract, multiply, or divide in your head without too much difficulty, especially with smaller numbers.Now suppose I ask you what number when multiplied by 4 gives you 20? Hmmm, that's a little trickier. Basically, I'm asking you for a number, x, that when multiplied by 4 gives 20, or what is x if 4x = 20? Ah ha! You may recognize that as an equation, making the problem a bit more clear.

PROJECT REQUIREMENTS:

HARDWARE: No Hardware is required for this project.

SOFTWARE: DEV C++

Dev-C++ is a free full-featured integrated development environment distributed under the GNU General Public License for programming in C and C++. It is written in Delphi. It is bundled with, and uses, the MinGW or TDM-GCC 64bit port of the GCC as its compiler.

Written in: Object Pascal
Developer(s): Bloodshed Software until 2005, Orwell (Johan Mes) since 2011
License: GNU General Public License
Stable release: 5.11 / April 27, 2015; 3 years ago
Operating system: Microsoft Windows, Linux (alpha only)

PROBLEM STATEMENT:

Mental maths strategies are the foundations for most of the areas of mathematics that use numbers. Without efficient mental strategies, children can often struggle to quickly and fluently calculate. Mental strategies are also the foundation of any written or formal method in mathematics. But sometimes solving problems can take time and might be huge calculations ,so by using this program it makes the process much faster efficient and fun . so by this code we can learn maths and also have fun while learning math .

PROJECT DOCUMENTATION:

In this code we have used if statements,switcase,for loop,function(without argument) :
If statement:

- If statement are used to evaluating logical expression based upon certain creiteria
- It makes the code much easier to work with
- Reduces the complexity of the code

Switch case:

- Switch case allows us to execute multiple operations for the different possible values of a single variable
- It improves clarity in the code
- It has rather faster execution

Switch case has four case

Case1:addition
Case2:subtraction
Case3:multication
Case4:division

And default has(“enter correct choice”)

For loop:

- To iterate the statement or a part of the programme several time
- It simplifies the complex problems into simple ones

Functions:
There several advantages of using functions in our code

- .It enhances the readability of a program.
- using functions in our code made easy to understand
- It reduces the complexity of a program and gives it a modular structure.
- By implementing functions and procedures in this program,the programmer reduces coding time and debugging time,thereby reducing the overall development time.
- VOID FUNCTION:
- void is used as a function return type, it indicates that the function does not return a value. When void appears in a pointer declaration, it specifies that the pointer is universal.

void addition():

function start by taking correct and incorrect count and takes response by user if response double equal to 0 games is exited.

- if not it gets into for loop.
- And print the question

- takes responce from user
- And evaluate the answer if correct takes correct +1 if else takes incorrect +1
  - if correct>incorrect it prints you passed the exam
  - else it prints you didn't pass!

void subtracation():

- function start by taking correct and incorrect count and takes response by user if response double equal to 0 games is exited
- if not it gets into for loop.
- And print the question

- takes responce from user
- And evaluate the answer if correct takes correct +1 if else takes incorrect +1
  - if correct>incorrect it prints you passed the exam
  - else it prints you didn't pass!

void multiplication():

- function start by taking correct and incorrect count and takes response by user if response double equal to 0 games is exited.
- if not it gets into for loop.
- And print the question

- takes responce from user
- And evaluate the answer if correct takes correct +1 if else takes incorrect +1
  - if correct>incorrect it prints you passed the exam
  - else it prints you didn't pass!

void division():

- function start by taking correct and incorrect count and takes response by user if response double equal to 0 games is exited.
- if not it gets into for loop.

- And print the question
- takes responce from user
- And evaluate the answer if correct takes correct +1 if else takes incorrect +1
  - if correct>incorrect it prints you passed the exam
- else it prints you didn't pass!
- division doest not take zero

CODE:

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
#include<time.h>
void addition();
void subtraction();
void multiplication();
void division();
int main()
{
	int i;
	int choice;
	printf("\t\t\tMENTAL_MATHS\n\n\n");
	printf("\t\t\tWELCOME !!\n\n");
	printf("Firstly,Enter Your Choice for given options:\n\n");
	printf("1.Addition\n\n2.Subtraction\n\n3.Multiplication\n\n4.Division\n\n");
	scanf("%d",&choice);
	switch(choice){
		case 1:
```

```
                printf("You Chose Addition\n");
                addition();
                break;
        case 2:
                printf("You Chose Subtraction\n");
                subtraction();
                break;
        case 3:
                printf("You Chose Multiplication\n");
                multiplication();
                break;
        case 4:
                printf("You Chose Division\n");
                division();
                break;
        default:
                printf("Enter Correct Choice\n");
                exit(0);
    }
    return 0;
}
void addition()
{
    int i,correct=0;
    int incorrect=0;
    int response;
    printf("Please Enter Number of Problems You Would Wish to Try:");
    scanf("%d",&response);
    if(response==0)
    {
        printf("\n Thanks for Playing....");
        exit(0);
    }
    for(i=0;i<response;i++)
    {
        float k=0;
        srand(time(0));
        int a=rand() % 12;
        int b=rand() % 12;
        printf("\n %d + %d = ?\n",a,b);
        scanf("%f",&k);
        if((a+b)==k){
            printf("\n Congratulations You are Correct !\n");
            correct++;
        }
        else{
            printf("Sorry You Were Incorrect!\n");
            printf("The Correct answer is %d\n",a+b);
            incorrect++;
        }
    }
```

```
	printf("Your Results :\n\n");
	printf("No. of Incorrect Answers :%d\n",incorrect);
	printf("No. of Correct Answers : %d\n",correct);
	if(correct>incorrect){
		printf("You Passed the Test!\nGood Work!\n\n");
	}
	else{
		printf("You didn't pass!\n You need more work!\n\n");
	}
}
void subtraction()
{
	int i,correct=0;
	int incorrect=0;
	int response;
	printf("Please Enter Number of Problems You Would Wish to Try:");
	scanf("%d",&response);
	if(response==0)
	{
		printf("\n Thanks for Playing....");
		exit(0);
	}
	for(i=0;i<response;i++)
	{
		float k=0;
		srand(time(0));
		int a=rand() % 12;
		int b=rand() % 12;
		printf("\n %d - %d = ?\n",a,b);
		scanf("%f",&k);
		if((a-b)==k){
			printf("\n Congratulations You are Correct !\n");
			correct++;
		}
		else{
			printf("Sorry You Were Incorrect!\nThe Correct answer is %d",a-b);
			incorrect++;
		}
	}
	printf("Your Results :\n\n");
	printf("No. of Incorrect Answers :%d\n",incorrect);
	printf("No. of Correct Answers : %d\n",correct);
	if(correct>incorrect){
		printf("You Passed the Test!\nGood Work!\n\n");
	}
	else{
		printf("You didn't pass!\n You need more work!\n\n");
	}
}
void multiplication()
{
```

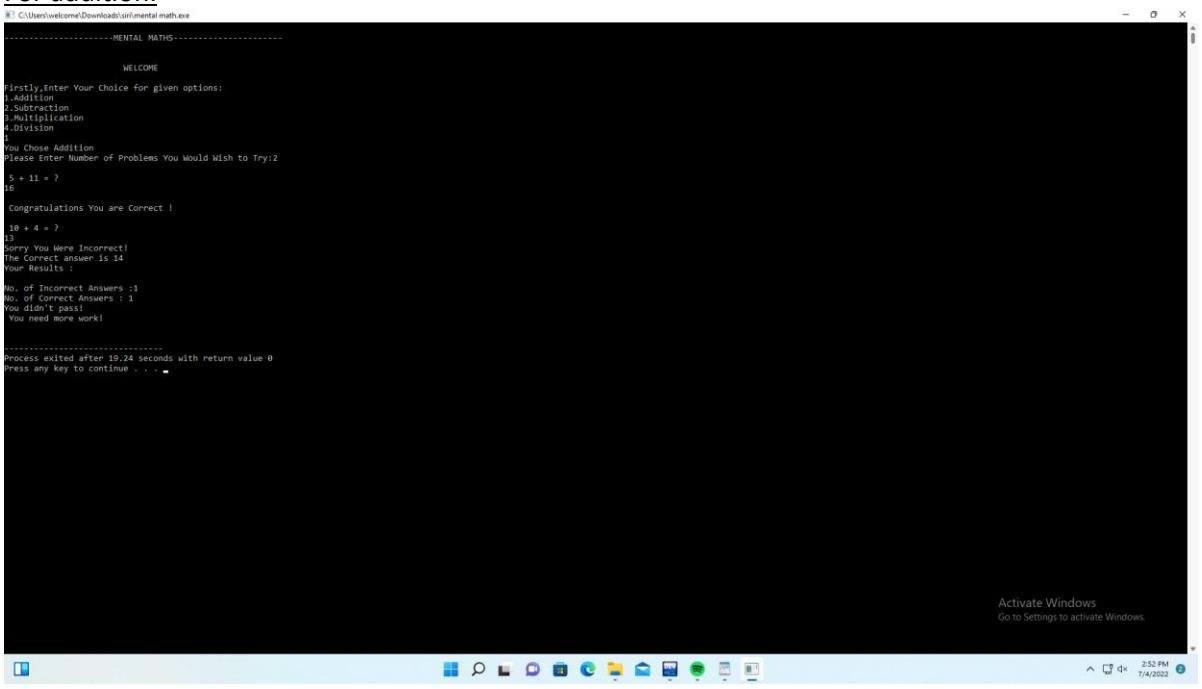
```
	int i,correct=0;
	int incorrect=0;
	int response;
	printf("Please Enter Number of Problems You Would Wish to Try:");
	scanf("%d",&response);
	if(response==0)
	{
		printf("\n Thanks for Playing....");
		exit(0);
	}
	for(i=0;i<response;i++)
	{
		float k=0;
		srand(time(0));
		int a=rand() % 12;
		int b=rand() % 12;
		printf("\n %d + %d = ?\n",a,b);
		scanf("%f",&k);
		if((a*b)==k){
			printf("\n Congratulations You are Correct !\n");
			correct++;
		}
		else{
			printf("Sorry You Were Incorrect!\nThe Correct answer is %d",a*b);
			incorrect++;
		}
	}
	printf("Your Results :\n\n");
	printf("No. of Incorrect Answers :%d\n",incorrect);
	printf("No. of Correct Answers : %d\n",correct);
	if(correct>incorrect){
		printf("You Passed the Test!\nGood Work!\n\n");
	}
	else{
		printf("You didn't pass!\n You need more work!\n\n");
	}
}
void division()
{
	int i,correct=0;
	int incorrect=0;
	int response;
	printf("Please Enter Number of Problems You Would Wish to Try:");
	scanf("%d",&response);
	if(response==0)
	{
		printf("\n Thanks for Playing....");
		exit(0);
	}
	for(i=0;i<response;i++)
	{
```

```
                int k=0;
                int upper=12;
                int lower=1;
                srand(time(0));
                int a=rand() % 12;
                int b;
                b=rand()%(upper-lower+1)+lower;
                printf("\n %d / %d = ?\n",a,b);
                scanf("%d",&k);
                if((a/b)==k){
                        printf("\n Congratulations You are Correct !\n");
                        printf("And its Remainder is %d",a%b);
                        correct++;
                }
                else{
                        printf("Sorry You Were Incorrect!\nThe Correct answer is %d with
remainder %d",a/b,a%b);
                        incorrect++;
                }
        }
        printf("Your Results :\n\n");
        printf("No. of Incorrect Answers :%d\n",incorrect);
        printf("No. of Correct Answers : %d\n",correct);
        if(correct>incorrect){
                printf("You Passed the Test!\nGood Work!\n\n");
        }
        else{
                printf("You didn't pass!\n You need more work!\n\n");
        }
}
```

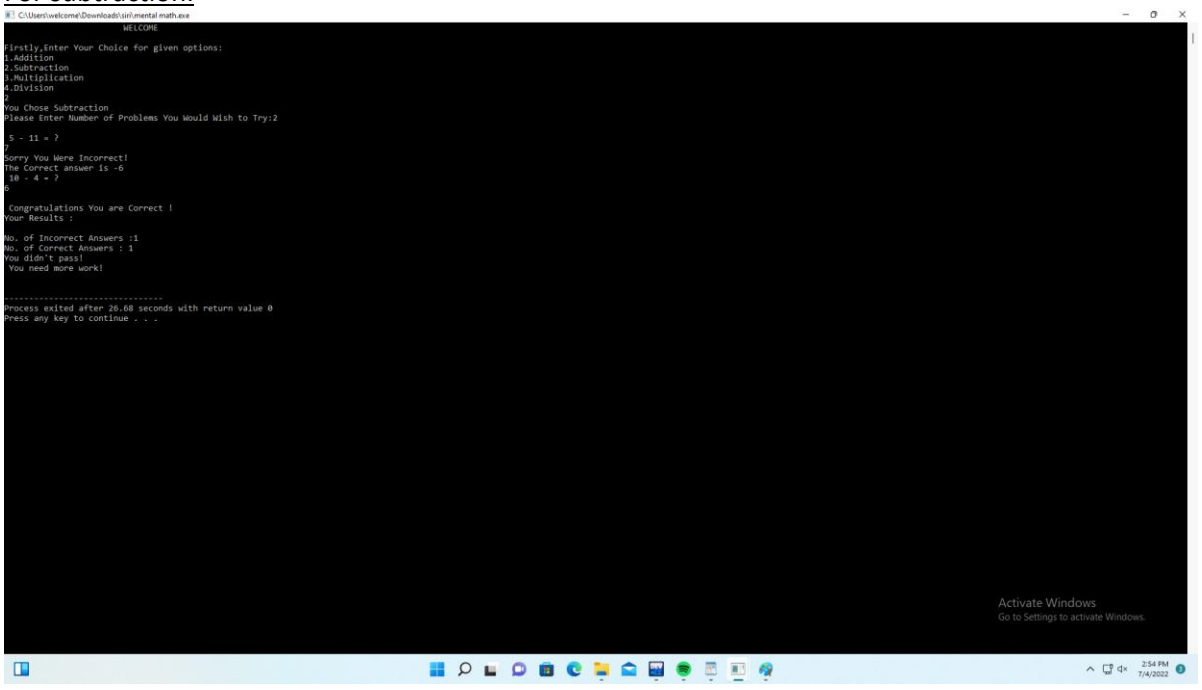
OUTPUTS:

Output for various outcomes

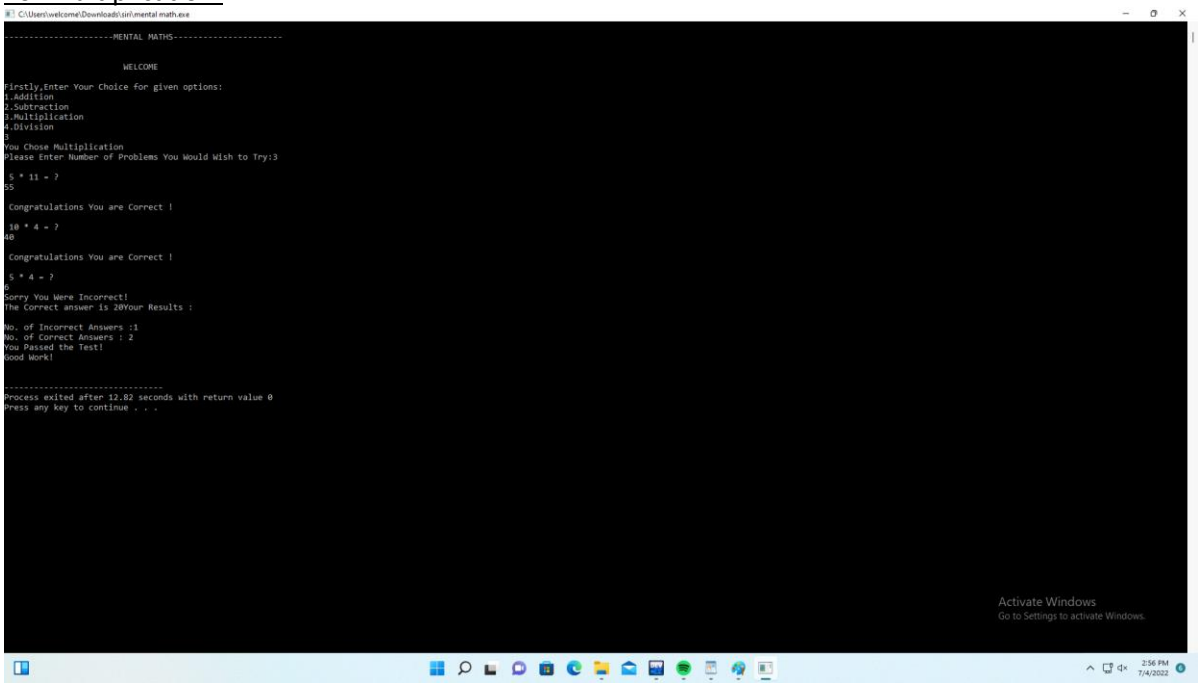
For addition:



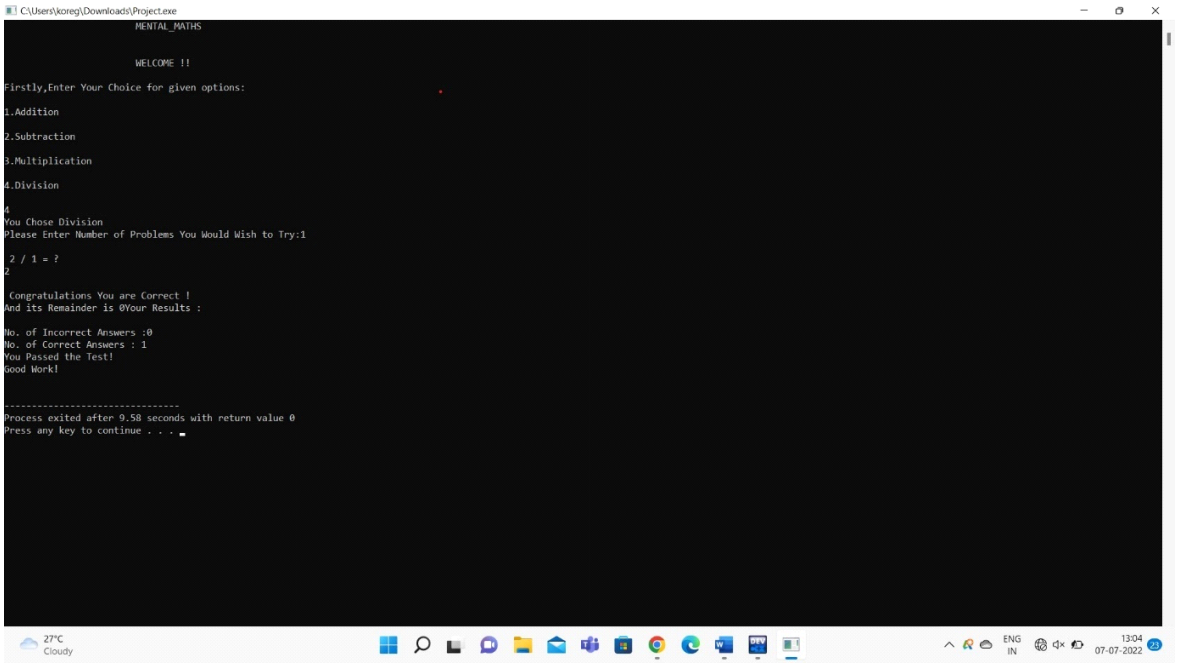
For subtraction:



For multiplication:



For division:



CONCLUSIONS:

Mental math deal to educate lower classes like 4-5 it helps the children to learn better.Mental maths strategies are the foundations for most of the areas of mathematics that use numbers. Without efficient mental strategies, children can often struggle to quickly and fluently calculate. Mental strategies are also the foundation of any written or formal method in mathematics. But sometimes solving problems can take time and might be huge calculations.

REFERENCES:

By this project I referred from the C-Language textbooks of C Programming absolute beginners guide from mygreatlearning.com it help me reduced the complexity of the code.