

test sheet 4

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WORKSHEET 4 – TESTING (Dice Duel)

1. Original code:

[Copy and paste your original code from Moodle into this box. Do not change it.]

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <Windows.h>
#include <time.h>
#include <math.h>

void main()
{
    int ranUser,userMath=0, ranOppenment,comMath=0, userPoints=0, comPoints=0;
    int low = 1, high = 6;
    int roundCounter=-1, stat[25]; //1,win2,lose,3draw

    char roll='q';

    while (roundCounter <= 25 && roll != 'n')
    {
        printf("Are you ready to roll the dice? ");
        scanf(" %c", &roll);

        if (roll == 'y')
        {
            while (roll == 'y')
            {
                roundCounter++;

                printf("You Rolled...\n");
                srand(time(NULL));

                for (int i = 0; i < 3; i++)
                {
                    Sleep(500);
                    ranUser = rand() % (high - low + 1) + low;
                    printf("%d ", ranUser);
                    userMath = userMath + ranUser;
                }
                printf("Now here is the computer\n");
                for (int i = 0; i < 3; i++)
```

```

        {
            Sleep(500);
            ranOppenment = rand() % (high - low + 1) + low;
            printf("%d ", ranOppenment);
            comMath = comMath + ranOppenment;
        }

        printf("THE COMPUTER ROLLED IN TOTAL %d WHILST YOU HAVE
ROLLED %d\n", comMath, userMath);

        if (userMath > comMath)
        {
            userPoints++;
            printf("YOU WON!! YOU HAVE %d AND OPPENMENT
HAS %d", userPoints, comPoints);
            stat[roundCounter] = 1;
        }
        else if (userMath < comMath)
        {
            comPoints++;
            printf("COMPUTER WON!! OPPENMENT HAS %d AND
YOU HAVE %d", comPoints, userPoints);
            stat[roundCounter] = 2;
        }
        else
        {
            printf("NO BODY WON! OPPENMENT HAS %d AND YOU
HAVE %d", userPoints, comPoints);
            stat[roundCounter] = 3;
        }
        printf("\nDo you want to roll the dice ");
        scanf(" %c", &roll);
    }
    else if (roll == 'n')
    {
        printf("NO WORRIES! HAVE A GREAT DAY!!!");

        for (int i = 0; i < roundCounter; i++)
        {
            printf("\nHere %d", stat[roundCounter]);
        }
    }
    else
    {
        printf("WRONG INPUT EITHER PRESS Y/N");
    }
}
roundCounter++;
for (int i = 0; i < roundCounter; i++)

```

```
{  
  
    if (stat[roundCounter] == 1)  
    {  
        printf("ROUND %d WIN",stat[roundCounter]);  
    }  
  
    if (stat[roundCounter] == 2)  
    {  
        printf("ROUND %d LOSE", stat[roundCounter]);  
    }  
  
    if (stat[roundCounter] == 3)  
    {  
        printf("ROUND %d DRAW", stat[roundCounter]);  
    }  
}  
}
```

2. Code Testing

For each test below (i – ix), run your code and show the results of the scenarios below. Present a screenshot of what happened when the programme ran. Did the programme behave correctly or did it do something unexpected, and if so, why?

Part a)

- i. Computer wins round
- ii. User wins round
- iii. Draw
- iv. "Go again" – enter *y*
- v. "Go again" – enter *n*
- vi. "Go again" – enter *Y*
- vii. "Go again" – enter *b*

Part b)

- viii. Show score/score tracking (depending on how you have implemented your program)
- ix. Show an overall win (however this is achieved eg first to 5, best of 12 etc)

Part c)

x. Analyse your code and write a short paragraph commenting on the efficiency of the original code. Could efficiency be improved and if so comment on what is currently inefficient?

Template for tests:

Test: i Computer wins round

Screenshot(s) of output:

```
Do you want to roll the dice y
You Rolled...
2 1 6 Now here is the computer
6 2 4 THE COMPUTER ROLLED IN TOTAL 12 WHILST YOU HAVE ROLLED 9
COMPUTER WON!! OPPENMENT HAS 1 AND YOU HAVE 2
Do you want to roll the dice _
```

The computer beat the user by having 3 more points over the player, this works as intended

Test: ii User wins round

Screenshot(s) of output:

```
9:08 C:\Users\2501949\OneDrive - University of Wales Trinity Saint David\Documents\UNI WORK
Are you ready to roll the dice? y
You Rolled...
5 1 6 Now here is the computer
3 3 3 THE COMPUTER ROLLED IN TOTAL 9 WHILST YOU HAVE ROLLED 12
YOU WON!! YOU HAVE 1 AND OPPENMENT HAS 0
Do you want to roll the dice
```

The user one by having more numbers in total compared to the opponent, this works as intended

Test: iii Draw

Screenshot(s) of output:

```
7:39 C:\Users\2501949\OneDrive - University of Wales Trinity Saint David\Documents\UNI WORK
Are you ready to roll the dice? y
You Rolled...
3 6 6 Now here is the computer
5 4 6 THE COMPUTER ROLLED IN TOTAL 15 WHILST YOU HAVE ROLLED 15
NO BODY WON! OPPENMENT HAS 0 AND YOU HAVE 0
Do you want to roll the dice _
```

The user and computer both drew as they both had 15, this works as intended

Test: iv "Go again" – enter y

Screenshot(s) of output:

```
Are you ready to roll the dice? y
You Rolled...
1 2 1 Now here is the computer
3 4 4 THE COMPUTER ROLLED IN TOTAL 11 WHILST YOU HAVE ROLLED 4
COMPUTER WON!! OPPENMENT HAS 1 AND YOU HAVE 0
Do you want to roll the dice y
You Rolled...
2 1 3 Now here is the computer
3 3 2 THE COMPUTER ROLLED IN TOTAL 19 WHILST YOU HAVE ROLLED 10
COMPUTER WON!! OPPENMENT HAS 2 AND YOU HAVE 0
Do you want to roll the dice
```

The program does what it is told and works as well, would like to make the interface more readable, however there seems to be an issue where the previous score is carried over to the new game

Test: v "Go again" – enter n

Screenshot(s) of output:

```
Are you ready to roll the dice? y
You Rolled...
1 3 5 Now here is the computer
5 4 5 THE COMPUTER ROLLED IN TOTAL 15 WHILST YOU HAVE ROLLED 9
COMPUTER WON!! OPPENMENT HAS 1 AND YOU HAVE 0
Do you want to roll the dice y
You Rolled...
5 6 2 Now here is the computer
5 3 4 THE COMPUTER ROLLED IN TOTAL 13 WHILST YOU HAVE ROLLED 14
YOU WON!! YOU HAVE 1 AND OPPENMENT HAS 1
Do you want to roll the dice n

C:\Users\2501949\OneDrive - University of Wales Trinity Saint David\Documents\UNI WC
4.exe (process 24144) exited with code 0 (0x0).
Press any key to close this window . . .
```

The program allowed the user to leave although I do think a simple message

Test: vi "Go again" – enter Y

Screenshot(s) of output:

```
2:12 C:\Users\2501949\OneDrive - University of Wales Trinity Saint David\Documents\UNI WC
Are you ready to roll the dice? Y
WRONG INPUT EITHER PRESS Y/NAre you ready to roll the dice?
```

Whilst the input is technically expected the program wont allow this input as that it doesn't have the ToLower function!

Test: vii "Go again" – enter b

Screenshot(s) of output:

```
Are you ready to roll the dice? Y
WRONG INPUT EITHER PRESS Y/NAre you ready to roll the dice? b
WRONG INPUT EITHER PRESS Y/NAre you ready to roll the dice?
```

Test: viii Show score/score tracking (depending on how you have implemented your program)

Screenshot(s) of output:

```
Are you ready to roll the dice? y
You Rolled...
2 1 5 Now here is the computer
8 5 2 THE COMPUTER ROLLED IN TOTAL 10 WHILST YOU HAVE ROLLED 8
COMPUTER WON!! OPPENMENT HAS 1 AND YOU HAVE 0
Do you want to roll the dice y
You Rolled...
8 3 4 Now here is the computer
6 3 5 THE COMPUTER ROLLED IN TOTAL 24 WHILST YOU HAVE ROLLED 18
COMPUTER WON!! OPPENMENT HAS 2 AND YOU HAVE 0
Do you want to roll the dice
```

Although this COULD be considered a design choice by keeping the score of previous games, this does not work as it should be for mine due to it not having a reset at the end/start of the loop

Test: ix Show an overall win (however this is achieved eg first to 5, best of 12 etc)

Screenshot(s) of output:

```

You Rolled...
4 5 4 Now here is the computer
5 6 2 THE COMPUTER ROLLED IN TOTAL 20 WHILST YOU HAVE ROLLED 24
YOU WON!! YOU HAVE 2 AND OPPENMENT HAS 0
Do you want to roll the dice y
You Rolled...
5 6 2 Now here is the computer
6 1 4 THE COMPUTER ROLLED IN TOTAL 31 WHILST YOU HAVE ROLLED 37
YOU WON!! YOU HAVE 3 AND OPPENMENT HAS 0
Do you want to roll the dice y
You Rolled...
6 6 1 Now here is the computer
2 1 3 THE COMPUTER ROLLED IN TOTAL 37 WHILST YOU HAVE ROLLED 50
YOU WON!! YOU HAVE 4 AND OPPENMENT HAS 0
Do you want to roll the dice y
You Rolled...
1 2 6 Now here is the computer
3 1 6 THE COMPUTER ROLLED IN TOTAL 47 WHILST YOU HAVE ROLLED 59
YOU WON!! YOU HAVE 5 AND OPPENMENT HAS 0
Do you want to roll the dice y
You Rolled...
4 5 6 Now here is the computer
1 6 1 THE COMPUTER ROLLED IN TOTAL 55 WHILST YOU HAVE ROLLED 74
YOU WON!! YOU HAVE 6 AND OPPENMENT HAS 0
Do you want to roll the dice y
You Rolled...
3 1 5 Now here is the computer
3 5 1 THE COMPUTER ROLLED IN TOTAL 64 WHILST YOU HAVE ROLLED 83
YOU WON!! YOU HAVE 7 AND OPPENMENT HAS 0
Do you want to roll the dice

```

```

Are you ready to roll the dice? y
You Rolled...
4 6 3
Now here is the computer
5 5 6
THE COMPUTER ROLLED IN TOTAL 16 WHILST YOU HAVE ROLLED 13
COMPUTER WON!! OPPENMENT HAS 1 AND YOU HAVE 0
Do you want to roll the dice again?

```

- For Clarification I changed that it can only go for 5 rounds, since originally it was 25!
The program is not working correctly since I was using 1 variable for 2 tasks making the program run forever since it was never going to hit the limit

It is keeping score however on whose winning and how many wins both players have

3. Consider the results of the above tests and your analysis of program efficiency and revisit your original code in order to address any tests that failed and/or improve code efficiency.

(Note: you may not be able to solve all of the problems that were encountered, but solve as many as you can.)

Paste your full revised code here :

```
[Copy and paste your full revised code here – note, do not use a screenshot]
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <Windows.h>
#include <time.h>
#include <math.h>

void main()
{
    int ranUser,userMath=0, ranOppenment,comMath=0, userPoints=0, comPoints=0;
    int low = 1, high = 6;
    int roundCounter=-1, stat[25],gameEnd=1; //1 win,2 lose, 3 draw

    char roll='q';

    while (roundCounter <= 25 && roll != 'n')
    {
        printf("Are you ready to roll the dice? ");
        scanf(" %c", &roll);

        if (roll == 'y')
        {
            while (gameEnd <= 25 && roll == 'y')
            {
                comMath = 0;
                userMath = 0;
                roundCounter++;

                printf("You Rolled...\n");
                srand(time(NULL));

                for (int i = 0; i < 3; i++)
                {
                    Sleep(500);
                    ranUser = rand() % (high - low + 1) + low;
                    printf("%d ", ranUser);
                    userMath = userMath + ranUser;
                }

                printf("\nNow here is the computer\n");
            }
        }
    }
}
```

```

        for (int i = 0; i < 3; i++)
        {
            Sleep(500);
            ranOppenment = rand() % (high - low + 1) + low;
            printf("%d ", ranOppenment);
            comMath = comMath + ranOppenment;
        }

        printf("\nTHE COMPUTER ROLLED IN TOTAL %d WHILST YOU HAVE
ROLLED %d\n", comMath, userMath);

        if (userMath > comMath)
        {
            userPoints++;
            printf("YOU WON!! YOU HAVE %d AND OPPENMENT
HAS %d", userPoints, comPoints);
            stat[roundCounter] = 1;
        }
        else if (userMath < comMath)
        {
            comPoints++;
            printf("COMPUTER WON!! OPPENMENT HAS %d AND
YOU HAVE %d", comPoints, userPoints);
            stat[roundCounter] = 2;
        }
        else
        {
            printf("NOBODY WON! OPPENMENT HAS %d AND YOU
HAVE %d IT'S A DRAW", userPoints, comPoints);
            stat[roundCounter] = 3;
        }
        gameEnd++;
        if (gameEnd > )
        {
            roll = 'n';
        }
        else
        {
            printf("\nDo you want to roll the dice again? ");
            scanf(" %c", &roll);
        }
    }
}
else if (roll == 'n')
{
    printf("NO WORRIES! HAVE A GREAT DAY!!!");

    for (int i = 0; i < roundCounter; i++)
    {
        printf("\nHere %d", stat[roundCounter]);
    }
}

```

```

        }
    }
    else
    {
        printf("WRONG INPUT EITHER PRESS Y/N");
    }

}
roundCounter++;
for (int i = 0; i < roundCounter; i++)
{
    if (stat[roundCounter] == 1)
    {
        printf("ROUND %d WIN", stat[roundCounter]);
    }

    if (stat[roundCounter] == 2)
    {
        printf("ROUND %d LOSE", stat[roundCounter]);
    }

    if (stat[roundCounter] == 3)
    {
        printf("ROUND %d DRAW", stat[roundCounter]);
    }
}
if (roll == 'n' && gameEnd > 3)
{
    printf("\nCongrats on Completing the game! HAVE A GREAT DAY!!!\n");
}
}

```

test sheet 4

GRADEMARK REPORT

FINAL GRADE

14/0

GENERAL COMMENTS

WORKSHEET 4

Coding- Generally good, and the use of Sleep adds drama!

You could have shown the statistics (as shown on the worksheet) and also state who the overall winner was on exit.

With ifs in a group (lines 100-113), don't forget to make them if...elseif...else, this is a safer way to go about things as you can't accidentally trigger multiple if statement when you didn't intend to.

6.5/10

Testing - Generally a good discussion-don't forget to say why something happened too, for example "the previous score is carried over to the new game" ...because the variable holding the score was not reset for the new game.

Towards the end, some personal pronouns are creeping in "I" and "mine" for example

7/10

Overall- 13.5/20

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