

2331962 Olcay Sivas

by Olcay Sivas

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Word count: 1558

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Name: Olcay Sivas_____

Student Number: 2331962_____

WORKSHEET 1 – TESTING (Using Variables)

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 <string.h>
#include <math.h>
void main()
{
    char surn[20], nati[10];
    int age, i, j, length;
    float workh;

    printf("Please enter your surname : ");
    scanf("%s", &surn);

    length = strlen(surn);

    while (length <= 2)
    {
        printf("Length of surname is too short please enter a valid surname
including at least 3 characters: ");
        scanf("%d", surn);
    }
    if (length > 10)
    {
        printf("Waow long surname!\n");
    }

    printf("Please enter your National Insurance Number : ");
    scanf("%s", nati);

    length = strlen(nati);
    //printf("%d", length);
    while (length != 9)
    {
```

```

        printf("National Insurance Number must be 9 characters long, please try
again: ");
        scanf("%s", nati);
    }

    printf("Your age: ");
    scanf("%d", &age);

    while (age <= 0 || age >= 99)
    {
        printf("Invalid attempt, please enter an age between 1-89:\n ");
        scanf("%d", &age);

    }
    if (age >= 0 || age <= 89)
    {
        printf("Your age is %d \n", age);
    }

    printf("How many hours do you work per week : ");
    scanf("%f", &workh);

    while (workh <= 0 || workh >= 168)
    {
        printf("Invalid number please enter a number between 1-168: ");
        scanf("%f", &workh);
    }
    if (workh <= 30)
    {
        printf("You're a part time worker.");
    }
    else
    {
        printf("You're a full time worker.");
    }
}

```

2. Code Testing

For each test below, run your code and enter the values provided. Present a screenshot of the programme running. Did the programme behave correctly or did it do something unexpected, and if so, why?

Surname:

- i. Enter *JONES*
- ii. Leave blank
- iii. Enter *A*
- iv. Enter *123*

National Insurance Number:

- i. Enter PE534121B
- ii. Leave blank
- iii. Enter AB11223344556677 (ie too long for National Insurance number format)

Age

- i. Enter 34
- ii. Enter 150
- iii. Enter -4
- iv. Enter a letter

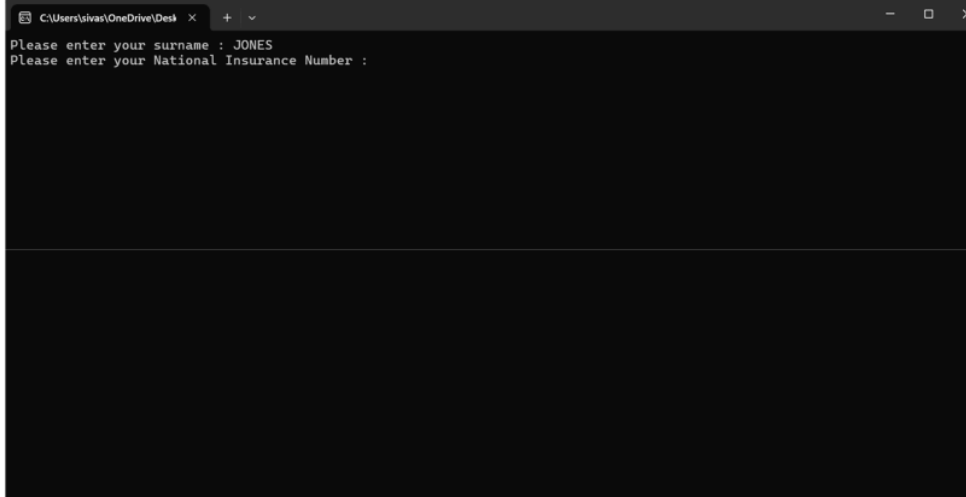
Number of working hours per week:

- i. Enter 37.5
- ii. Enter 105
- iii. Enter 0
- iv. Enter -2

Fill in a box for each test above. You should present 15 separate boxes, 1 for each test. (Note: the two boxes are provided as a template)

Test:
Surname i. Enter JONES

Screenshot(s) of output:

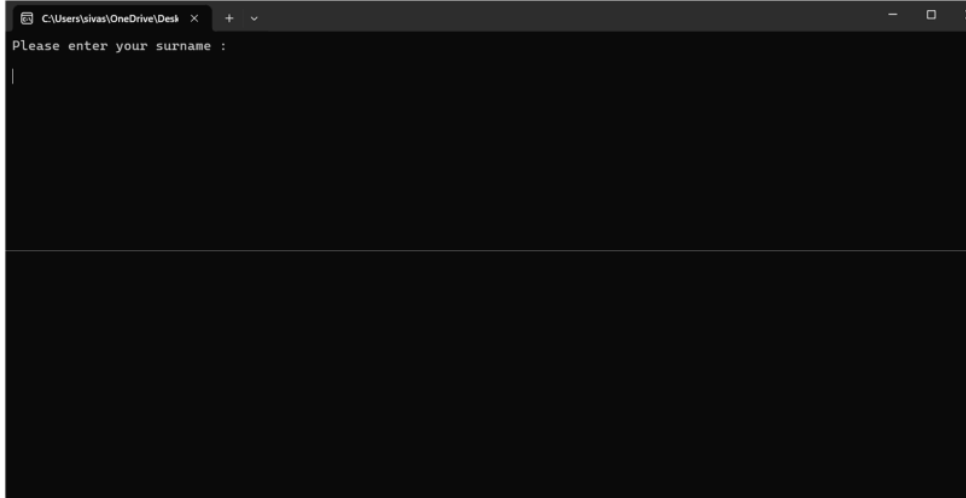


```
C:\Users\sivas\OneDrive\Desktop > .\Program.exe
Please enter your surname : JONES
Please enter your National Insurance Number :
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the "JONES" surname was accepted as a valid surname by the program and it has moved on to the next question.

Test:
Surname ii Leave blank

Screenshot(s) of output:



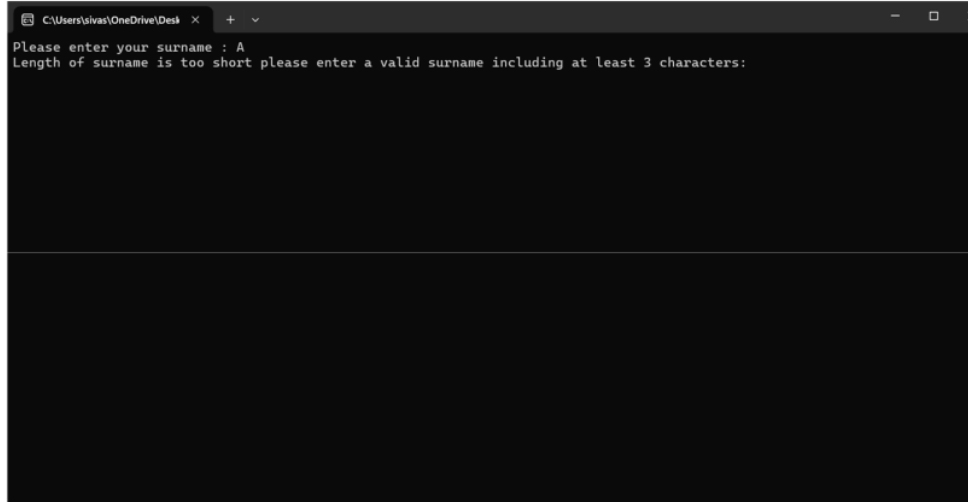
```
C:\Users\sivas\OneDrive\Desktop > .\Program.exe
Please enter your surname :
```

Result: Did the programme behave as expected ie syntactically and logically correct?
No, the enter key hasn't been recognised as an input by the program and was interpreted as a space between lines. The next question hasn't been started and the next character is still waiting.

Continue the rest of the tests below. (Copy and paste a box for each one)

i. **Test: Surname** iii Enter A

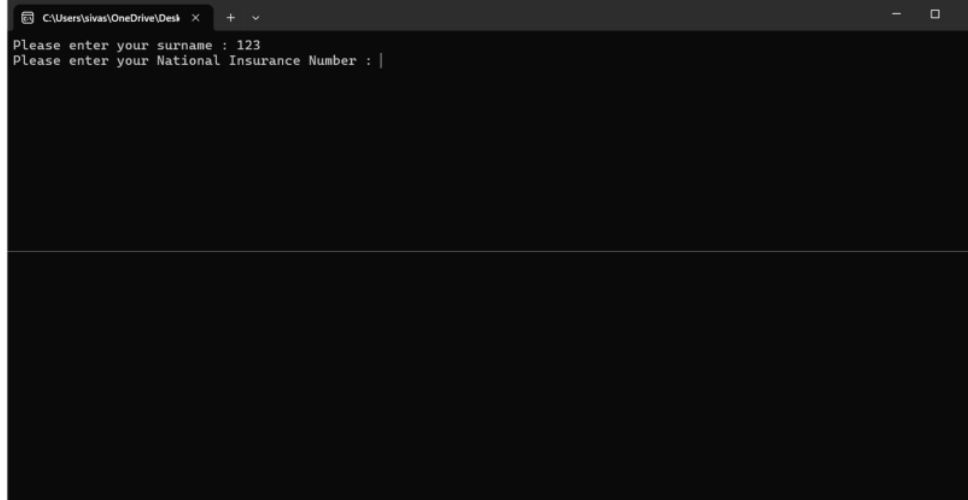
Screenshot(s) of output:



Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the only one character was recognised as too short for a surname by the program and the user was asked to put a valid input.

i. **Test: Surname iv** Enter 123

Screenshot(s) of output:

A screenshot of a terminal window with a dark background. The window title bar shows the file path 'C:\Users\sivas\OneDrive\Desktop' and standard window controls. The terminal displays two lines of text: 'Please enter your surname : 123' and 'Please enter your National Insurance Number : |'. The cursor is positioned at the end of the second line, indicating the program is waiting for input.

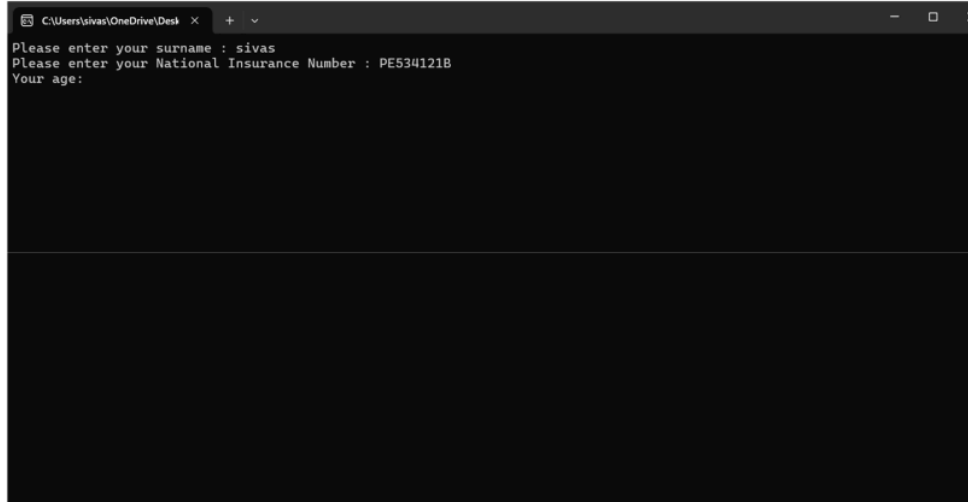
```
C:\Users\sivas\OneDrive\Desktop x + - x
Please enter your surname : 123
Please enter your National Insurance Number : |
```

Result: Did the programme behave as expected ie syntactically and logically correct?

No, the 123 answer been accepted as a valid surname by the program because only the length of it was checked. The content of the surname wasn't able to be checked by the program as content of surname shouldn't have included numbers or special characters.

Test: NIN i Enter PE534121B

Screenshot(s) of output:



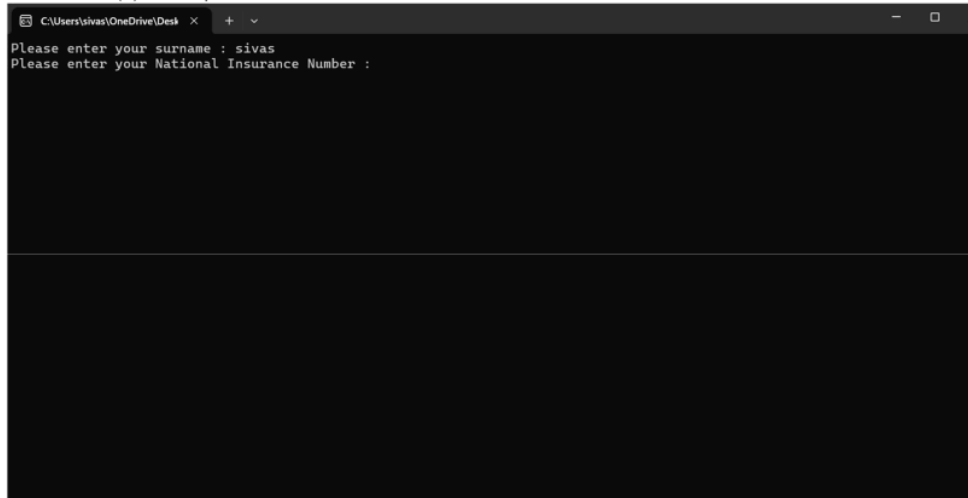
A screenshot of a terminal window with a dark background. The window title bar shows 'C:\Users\sivas\OneDrive\Desktop' and standard window controls. The terminal text is as follows:

```
Please enter your surname : sivas
Please enter your National Insurance Number : PE534121B
Your age:
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the PE534121B has been accepted as a valid 9 character long National Insurance Number by the program.

i. **Test: NIN** ii Leave blank

Screenshot(s) of output:



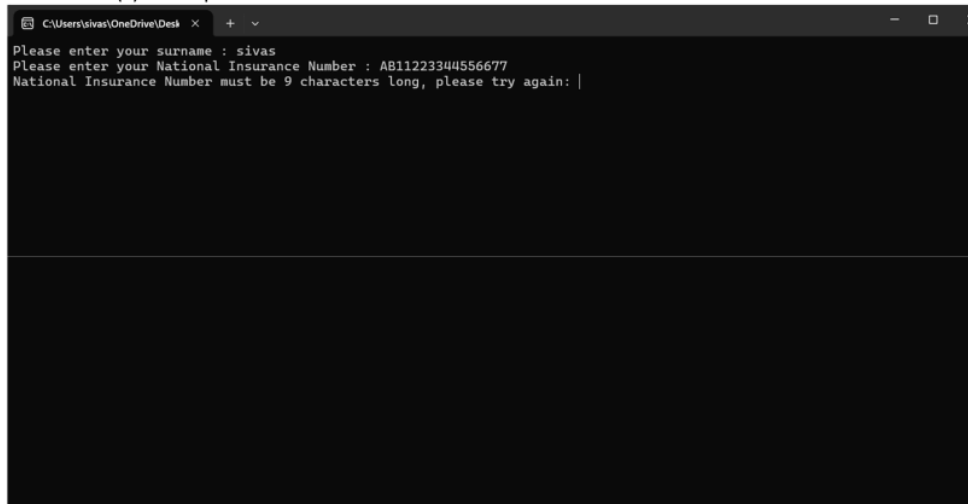
A screenshot of a terminal window with a dark background. The window title bar shows 'C:\Users\sivas\OneDrive\Desktop' and standard window controls. The terminal text is as follows:

```
Please enter your surname : sivas
Please enter your National Insurance Number :
```

Result: Did the programme behave as expected ie syntactically and logically correct?
No, same as the surname issue, the enter key hasn't been checked as an input by program. It's been treated as a space between lines and the next question hasn't been able to being moved into.

Test: NIN iii Enter AB11223344556677

Screenshot(s) of output:

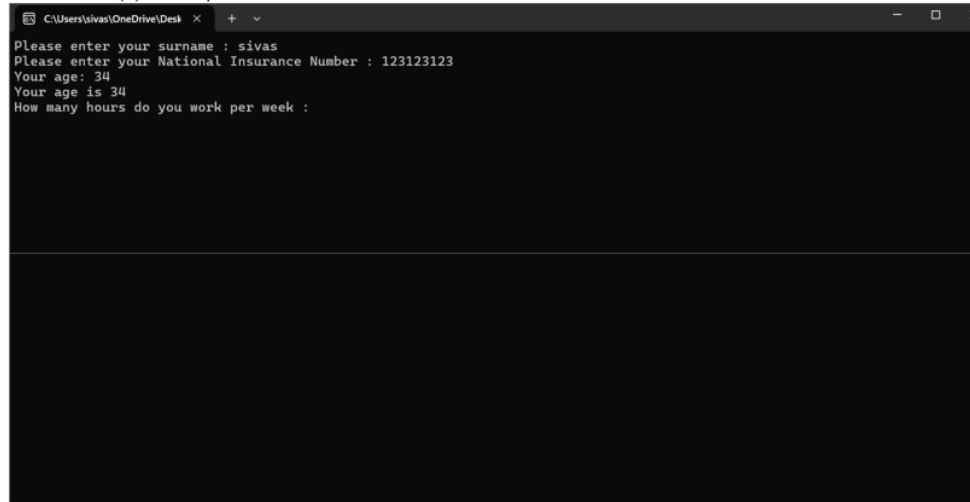
A screenshot of a terminal window with a dark background. The window title bar shows the file path 'C:\Users\sivas\OneDrive\Desktop' and standard window controls. The terminal text reads: 'Please enter your surname : sivas', 'Please enter your National Insurance Number : AB11223344556677', and 'National Insurance Number must be 9 characters long, please try again: |'.

```
C:\Users\sivas\OneDrive\Desktop x + - x
Please enter your surname : sivas
Please enter your National Insurance Number : AB11223344556677
National Insurance Number must be 9 characters long, please try again: |
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, different than 9 character long input been rejected by the program correctly and user been re asked to put a valid input.

Test: AGE i Enter 34

Screenshot(s) of output:



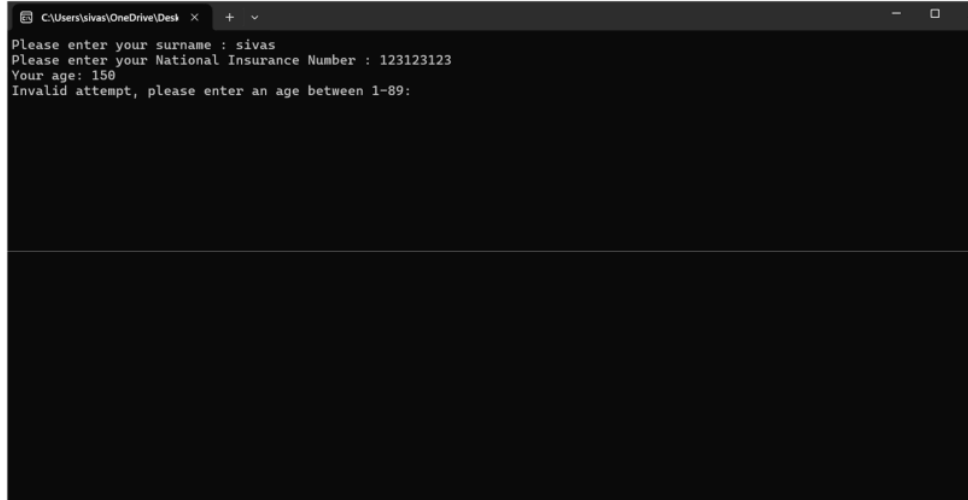
A screenshot of a Windows command prompt window. The title bar shows the file path 'C:\Users\sivas\OneDrive\Desktop' and standard window controls. The command prompt displays the following text: 'Please enter your surname : sivas', 'Please enter your National Insurance Number : 123123123', 'Your age: 34', 'Your age is 34', and 'How many hours do you work per week :'. The input '34' for the age field is visible on the line before the program's confirmation.

```
C:\Users\sivas\OneDrive\Desktop>
Please enter your surname : sivas
Please enter your National Insurance Number : 123123123
Your age: 34
Your age is 34
How many hours do you work per week :
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the age 34 been accepted as a valid age by program without any issue.

i. **Test: AGE** ii Enter 150

Screenshot(s) of output:

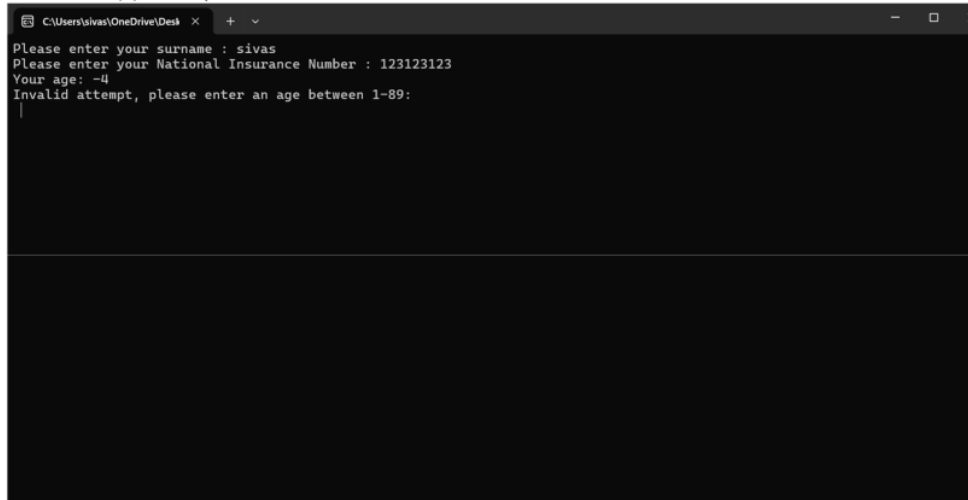


```
C:\Users\sivas\OneDrive\Desktop >
Please enter your surname : sivas
Please enter your National Insurance Number : 123123123
Your age: 150
Invalid attempt, please enter an age between 1-89:
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the age 150 hasn't been accepted by the program as 89 been accepted as maximum age gap for working and the user was asked to re answer the question.

i. **Test: AGE iii Enter -4**

Screenshot(s) of output:



```
C:\Users\sivas\OneDrive\Desktop >
Please enter your surname : sivas
Please enter your National Insurance Number : 123123123
Your age: -4
Invalid attempt, please enter an age between 1-89:
|
```

Result: Did the programme behave as expected ie syntactically and logically correct?

Yes, the age of -4 correctly been rejected by the program as an invalid input and user been asked to put a valid input.

i. **Test: AGE iv** Enter a letter

Screenshot(s) of output:

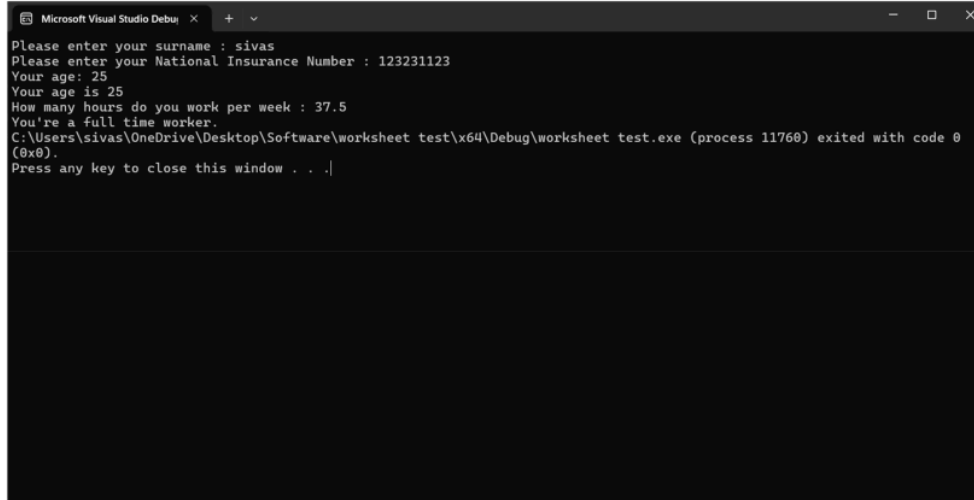
The screenshot shows a Windows command prompt window with the title bar "C:\Users\shivansh\OneDrive\Desktop". The window contains a series of 20 identical lines of text, each consisting of the prompt "Invalid attempt, please enter an age between 1-89:". The text is displayed in a monospaced font, and the window has standard Windows window controls (minimize, maximize, close) in the top right corner.

Result: Did the programme behave as expected ie syntactically and logically correct?

No, the infinite loop has been gone into by the program and reading a letter been failed by scanf so it has been tried to be read infinitely.

i. **Test: WORK i** Enter 37.5

Screenshot(s) of output:

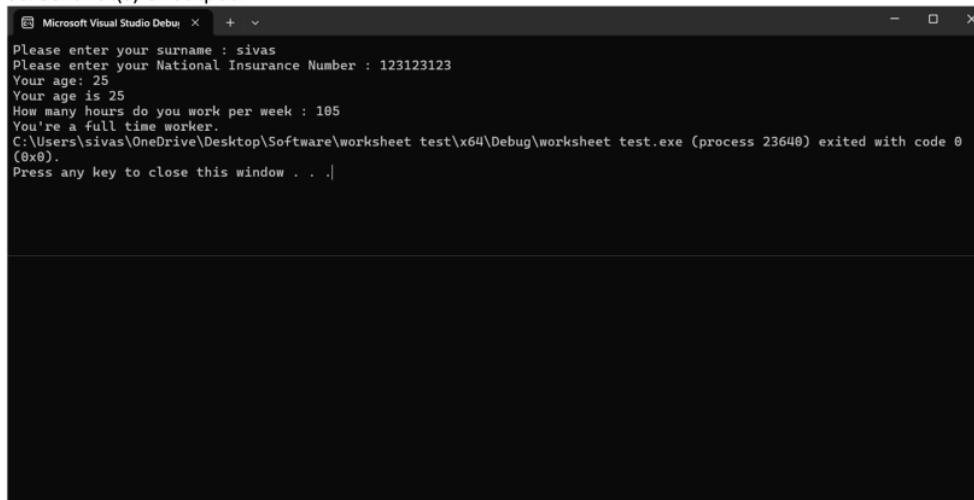


```
Microsoft Visual Studio Debug
Please enter your surname : sivas
Please enter your National Insurance Number : 123231123
Your age: 25
Your age is 25
How many hours do you work per week : 37.5
You're a full time worker.
C:\Users\sivas\OneDrive\Desktop\Software\worksheet test\x64\Debug\worksheet test.exe (process 11760) exited with code 0
(0x0).
Press any key to close this window . . .|
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the age of float 37.5 was accepted as valid working hours by the program without issue.

i. **Test: WORK ii Enter 105**

Screenshot(s) of output:

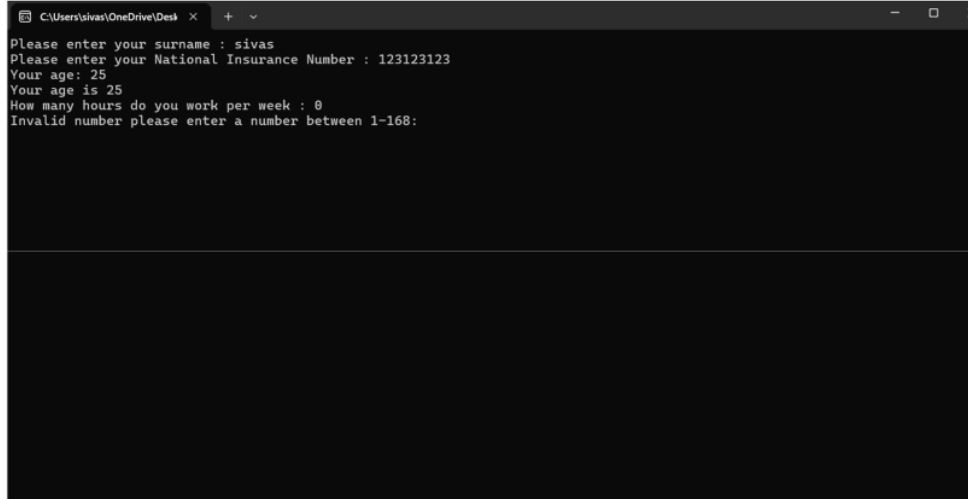


```
Microsoft Visual Studio Debug
Please enter your surname : sivas
Please enter your National Insurance Number : 123123123
Your age: 25
Your age is 25
How many hours do you work per week : 105
You're a full time worker.
C:\Users\sivas\OneDrive\Desktop\Software\worksheet test\x64\Debug\worksheet test.exe (process 23640) exited with code 0
(0x0).
Press any key to close this window . . .|
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the 105 hours been accepted as valid working hours by the program.
No, the 105 hours shouldn't have been accepted due to maximum working hours in UK been set to 48 a week.

i. **Test: WORK iii** Enter 0

Screenshot(s) of output:

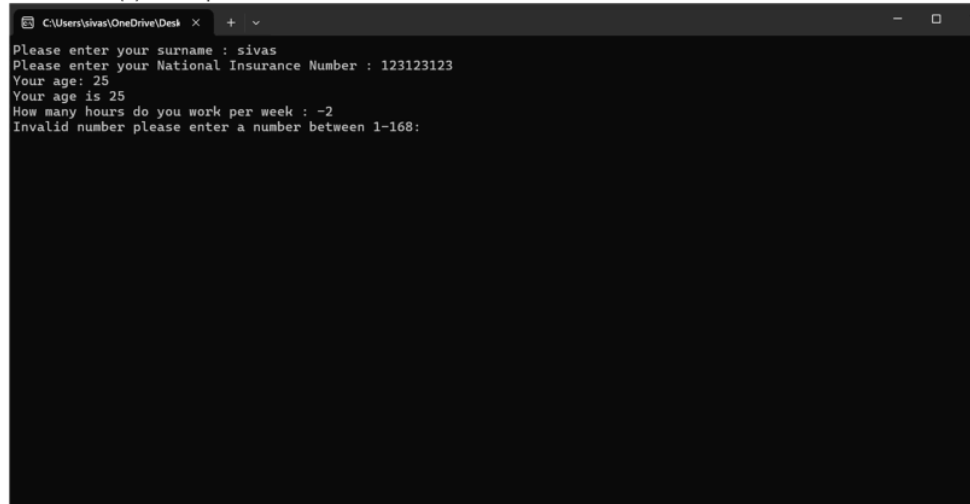


```
C:\Users\sivas\OneDrive\Desktop > .\program.exe
Please enter your surname : sivas
Please enter your National Insurance Number : 123123123
Your age: 25
Your age is 25
How many hours do you work per week : 0
Invalid number please enter a number between 1-168:
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, the 0 hours working time was rejected by the program as 0 has been accepted invalid in the code provided.

i. **Test: WORK iv** Enter -2

Screenshot(s) of output:



A screenshot of a Windows command prompt window. The title bar shows the file path 'C:\Users\sivas\OneDrive\Desktop' and standard window controls. The command prompt displays the following text: 'Please enter your surname : sivas', 'Please enter your National Insurance Number : 123123123', 'Your age: 25', 'Your age is 25', 'How many hours do you work per week : -2', and 'Invalid number please enter a number between 1-168:'. The background of the command prompt is black, and the text is white.

```
C:\Users\sivas\OneDrive\Desktop >
Please enter your surname : sivas
Please enter your National Insurance Number : 123123123
Your age: 25
Your age is 25
How many hours do you work per week : -2
Invalid number please enter a number between 1-168:
```

Result: Did the programme behave as expected ie syntactically and logically correct?
Yes, -2 hours been rejected by the program as negative numbers been accepted invalid in the code provided.

3. Consider the results of the above tests and revisit your code in order to solve the problems.
(Note: you may not be able to solve all of them, but solve as many as you can.)

Paste your revised code here:

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <string.h>
#include <math.h>

void main()
{
    char surn[20], nati[20];
    int age, valid, length;
    float workh;

    valid = 0;
    while (valid == 0)
    {
        printf("Please enter your Surname: ");
        scanf("%s", &surn);
        length = strlen(surn);

        if (length < 2)
        {
            printf("Length of surname is too short please enter a valid surname
including at least 3 characters.\n");
        }
        else
        {
            valid = 1;
            for (int i = 0; i < length; i++)
            {
                if ((surn[i] < 'A' || surn[i] > 'Z') && (surn[i] < 'a' || surn[i] > 'z'))
                {
                    valid = 0;
                }
            }

            if (valid == 0)
            {
                printf("Error: Surname can't contain numbers or symbols. Please
try again.\n");
            }
        }

        if (length > 10)
        {
```

```

        printf("Waow long surname!\n");
    }

    valid = 0;
    while (valid == 0)
    {
        printf("Please enter your National Insurance Number (e.g. PE253412B): ");
        scanf("%s", nati);
        length = strlen(nati);

        if (length != 9)
        {
            printf("National Insurance Number must be 9 characters long, please try
again.\n");
        }
        else
        {
            valid = 1;

            if ((nati[0] < 'A' || nati[0] > 'Z') && (nati[0] < 'a' || nati[0] > 'z'))
            {
                valid = 0;
            }

            if ((nati[1] < 'A' || nati[1] > 'Z') && (nati[1] < 'a' || nati[1] > 'z'))
            {
                valid = 0;
            }

            for (int i = 2; i <= 7; i++)
            {
                if (nati[i] < '0' || nati[i] > '9')
                {
                    valid = 0;
                }
            }

            if ((nati[8] < 'A' || nati[8] > 'Z') && (nati[8] < 'a' || nati[8] > 'z'))
            {
                valid = 0;
            }

            if (valid == 0)
            {
                printf("Error: Invalid Format. NIN must start with 2 letters,
followed by 6 numbers, and end with 1 letter.\n");
            }
        }
    }

    valid = 0;

```

```

while (valid == 0)
{
    printf("Your age: ");
    if (scanf("%d", &age) == 0)
    {
        scanf("%s", &sum);
        printf("Invalid attempt, please enter a number.\n");
    }
    else
    {
        if (age < 16 || age > 110)
        {
            printf("Invalid attempt, please enter an age between 16-110.\n");
        }
        else
        {
            valid = 1;
        }
    }
}
printf("Your age is %d\n", age);

valid = 0;
while (valid == 0)
{
    printf("How many hours do you work per week : ");
    if (scanf("%f", &workh) == 0)
    {
        scanf("%s", &sum);
        printf("Invalid number please enter a number.\n");
    }
    else
    {
        if (workh <= 0 || workh > 48)
        {
            printf("Invalid number please enter a number between 1-48.\n");
        }
        else
        {
            valid = 1;
        }
    }
}

if (workh <= 30)
{
    printf("You're a part time worker.\n");
}
else
{
    printf("You're a full time worker.\n");
}

```

```
}  
  
printf("\n-----\n");  
printf("EMPLOYEE DETAILS CONFIRMATION\n");  
printf("-----\n");  
printf("Surname:   %s\n", sum);  
printf("NI Number:  %s\n", nati);  
printf("Age:       %d\n", age);  
printf("Weekly Hours: %.2f\n", workh);  
printf("-----\n");  
}
```

FINAL GRADE

GENERAL COMMENTS

WORKSHEET 1

9/0

Coding- Good effort on checking the format or surname and NI number - could have been just a tiny bit more efficient. 48 hours might be on the short side for some jobs (eg doctors)

4.5/5

Testing - Good discussion. You might want to suggest what would solve the problem -"The surname shouldn't have included numbers or special characters - validation needs to be added to handle this". -just to be clear what is needed. Good effort on the passive voice writing style.

4.5/5

Overall - 9/10

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