



## [Workshop Report-1]

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The following code prints out the value of an int variable and a string (char \*) :

```
#include <stdio.h>

void main(int argc, char *argv[])
{
    int age = 10;
    char *name = "Hiran";
    printf("Hello %s, you are %d years old.", name, age);
}
```

1. Now modify the program so that it uses the command line arguments to supply name and age. i.e. it uses the argc and argv arguments/parameters.

When you run it, it should produce the following:

```
./myprog Jnaneshwar 100
```

```
Hello Jnaneshwar, you are 100 years old.
```

```
= > #include <stdio.h>
```

```
#include <unistd.h>
```

```
void main (int argc, char *argv[])
```

```
{
```

```
    printf("Hello %s, you are %s years old", argv[1], argv[2]);
```

```
}
```

```
(kali@kali)-[~/Desktop/C workshop 1]
$ gcc WS1_question1.c -o WS1_question1

(kali@kali)-[~/Desktop/C workshop 1]
$ ./WS1_question1
Hello (null), you are COLORFGBG=15;0 years old

(kali@kali)-[~/Desktop/C workshop 1]
$ ./WS1_question1 Rishab 19
Hello Rishab, you are 19 years old

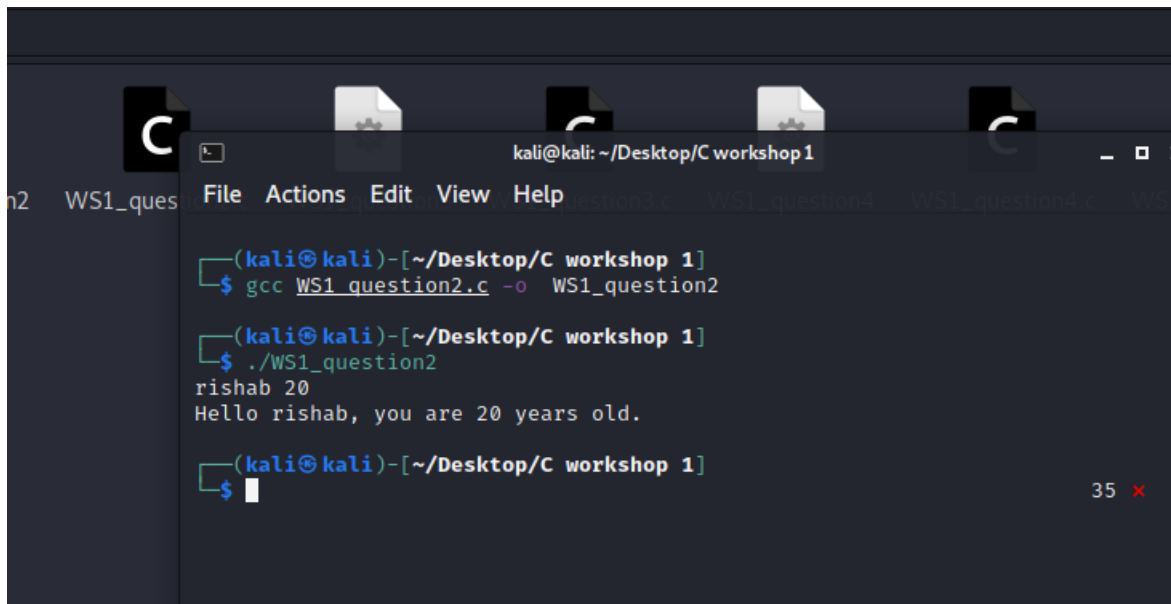
(kali@kali)-[~/Desktop/C workshop 1]
$
```

2. Now modify the program again so that it uses the `scanf()` function to get input from the user for the name and age.

The following code count the integer variable `n` from 0 to 9 and prints out “Odd” if `n` is even and just the value of `n` if it is even:

```
= > #include <stdio.h>
```

```
void main()
{
    char name [20];
    int age;
    scanf("%s", name);
    scanf("%d", &age);
    printf("Hello %s, you are %d years old.", name, age);
}
```



```
kali@kali: ~/Desktop/C workshop 1
File Actions Edit View Help
(kali@kali)~[~/Desktop/C workshop 1]
$ gcc WS1_question2.c -o WS1_question2
(kali@kali)~[~/Desktop/C workshop 1]
$ ./WS1_question2
rishab 20
Hello rishab, you are 20 years old.
(kali@kali)~[~/Desktop/C workshop 1]
$
```

3. Now modify the program so that it counts the variable  $n$  from 1 to 100 and, if  $n$  is a multiple of 2 ( eg. 2, 4, 6, etc), it would print out the word “Bish”, and if  $n$  is a multiple of 3 (eg. 3, 6, 9. 12 etc), it would print out the word “Bash”, and if  $n$  is a multiple of 5 (eg. 5, 10, 15 etc), it would print out the word “Bosh”.

However, if  $n$  is a multiple of 2 and 3 (eg. 6), it would print out the words “BishBash”, and if  $n$  is a multiple of 2 and 5 (eg. 10), it would print out the words “BishBosh”, and if  $n$  is a multiple of 3 and 5 (eg. 15), it would print out the words “BashBosh”. Finally, if  $n$  is a multiple of 2, 3 and 5 (eg. 30), it would print out the words “BishBashBosh”.

= > #include <stdio.h>

```
void main (int argc, char *argv[]) {
    for (int n=1; n<=100; n++) {

        if(n % 2 == 0 && n % 3 == 0 && n % 5 == 0) {
            printf("BishBashBosh\n");
        }

        else if(n % 3 == 0 && n % 5 == 0) {
            printf("BashBosh\n");
        }

        else if(n % 2 == 0 && n % 5 == 0) {
            printf("BishBosh\n");
        }

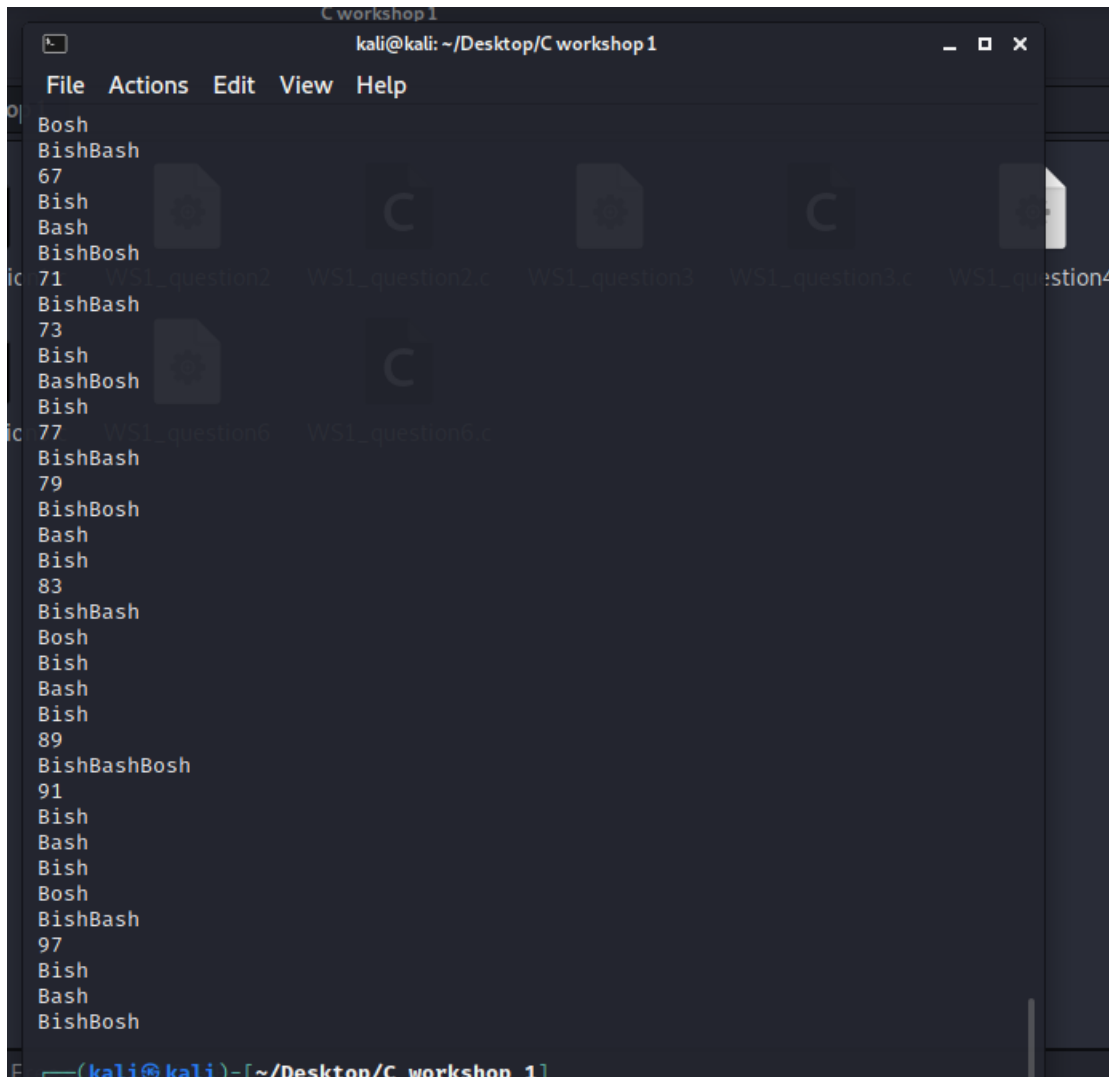
        else if(n % 2 == 0 && n % 3 == 0) {
            printf("BishBash\n");
        }
    }
}
```

```
    else if(n % 2 == 0) {  
        printf("Bish\n");  
    }  
  
    else if(n % 3 == 0) {  
        printf("Bash\n");  
    }  
  
    else if(n % 5 == 0) {  
        printf("Bosh\n");  
    }  
  
    else if(n % 3 == 0) {  
        printf("BishBash\n");  
    }  
  
    else {  
        printf("%d\n", n);  
    }  
}  
}
```

```
kali@kali: ~/Desktop/C workshop 1
File Actions Edit View Help

(kali@kali)~[~/Desktop/C workshop 1]
$ gcc WS1_question3.c -o WS1_question3

(kali@kali)~[~/Desktop/C workshop 1]
$ ./WS1_question3
1
Bish
Bash
Bish
Bosh
BishBash
7
Bish
Bash
BishBosh
11
BishBash
13
Bish
BashBosh
Bish
17
BishBash
19
BishBosh
Bash
Bish
23
BishBash
Bosh
Bish
Bash
Bish
29
BishBashBosh
31
Bish
Bash
Bish
Bosh
BishBash
37
Bish
Bash
BishBosh
41
BishBash
43
Bish
BashBosh
Bish
47
```



```
C workshop 1
kali@kali: ~/Desktop/C workshop 1
File Actions Edit View Help
Bosh
BishBash
67
Bish
Bash
BishBash
71 WS1_question2 WS1_question2.c WS1_question3 WS1_question3.c WS1_question4
BishBash
73
Bish
BashBash
Bish
77 WS1_question6 WS1_question6.c
BishBash
79
BishBash
Bash
Bish
83
BishBash
Bosh
Bish
Bash
Bish
89
BishBashBosh
91
Bish
Bash
Bish
Bosh
BishBash
97
Bish
Bash
BishBash
```

4. Now write a function called `swap()` that would swap the values of the variables `a` and `b`, when you call the `swap()` with the variables `a` and `b` as parameters. Please note, this exercise requires pointers.

The following program fills an int array of size 10 and fills it with random numbers and prints them out:

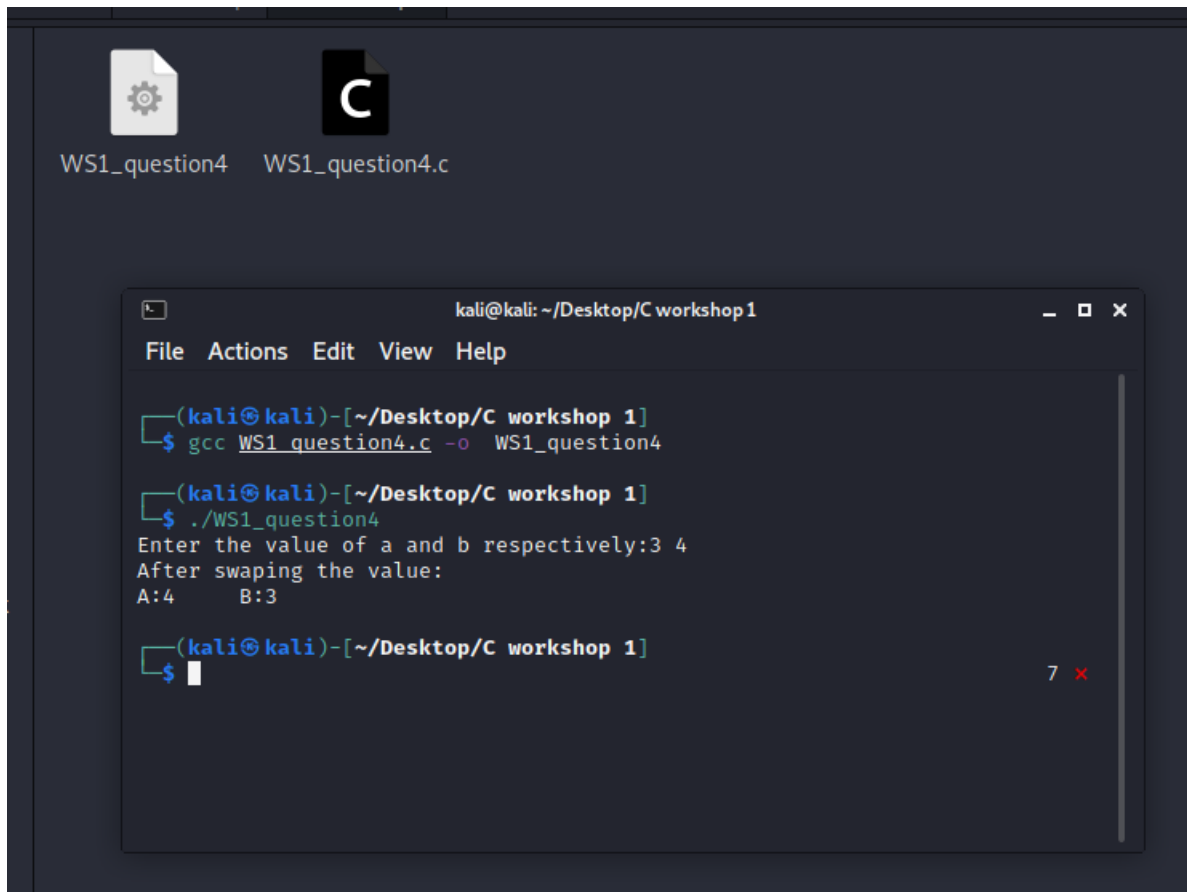
```
= > #include<stdio.h>
```

```
void swap(int *a, int *b)
{
    int temp;
    temp = *a;
    *a = *b;
    *b = temp;
}
```

```

void main()
{
    int a,b;
    printf("Enter the value of a and b respectively:");
    scanf("%d%d",&a,&b);
    swap(&a,&b);
    printf("After swaping the value:\n");
    printf("A:%d\tB:%d",a,b);
}

```



- Now modify it to will ask the user for a number between 1 and 50, and then use the C function malloc() to allocate an int array of that size, fill it with random numbers and print out the value of each element of that array.

The following code creates 2 threads in a program and counts to 10 in each thread :

```

= > #include<stdio.h>
      #include<stdlib.h>

```

```

void main(){
    int n,i; // n is total number of items
    int *p; //pointer variable

```



```

printf("Enter a number between 1 to 50:");
scanf("%d",&n);
p = (int*)malloc(n * sizeof(int));
for(i=0;i<n;i++){
    *(p+i) = rand();
}
for ( i = 0; i < n; i++)
{

    printf("%d\n",*(p+i));

}
}

```

The screenshot shows a Kali Linux desktop environment. At the top, there are two tabs: 'Desktop' and 'C workshop 1'. Below the tabs, there are five file icons: a gear icon, a 'C' icon, a gear icon, a 'C' icon, and a 'C' icon. Below the icons, there are five file names: 'S1\_question4', 'WS1\_question4.c', 'WS1\_question5', 'WS1\_question5.c', and 'WS1\_question6.c'. In the foreground, there is a terminal window titled 'kali@kali: ~/Desktop/C workshop 1'. The terminal window has a menu bar with 'File', 'Actions', 'Edit', 'View', and 'Help'. The terminal content shows the following:

```

(kali@kali)-[~/Desktop/C workshop 1]
$ ./WS1_question5
Enter a number between 1 to 50:30
1804289383
846930886
1681692777
1714636915
1957747793
424238335
719885386
1649760492
596516649
1189641421
1025202362
1350490027
783368690
1102520059
2044897763
1967513926
1365180540
1540383426
304089172
1303455736
35005211
521595368
294702567
1726956429
336465782
861021530
278722862
233665123
2145174067
468703135

```

At the bottom of the terminal window, there is a prompt for the next command:

```

(kali@kali)-[~/Desktop/C workshop 1]
$ 

```

In the bottom right corner of the terminal window, there is a status bar showing '30' and a red 'x' icon.

6. Modify the program to accept a command line argument to specify the number of threads, and then create that many threads dynamically to run.

```
= > #include <stdlib.h>
#include <stdio.h>

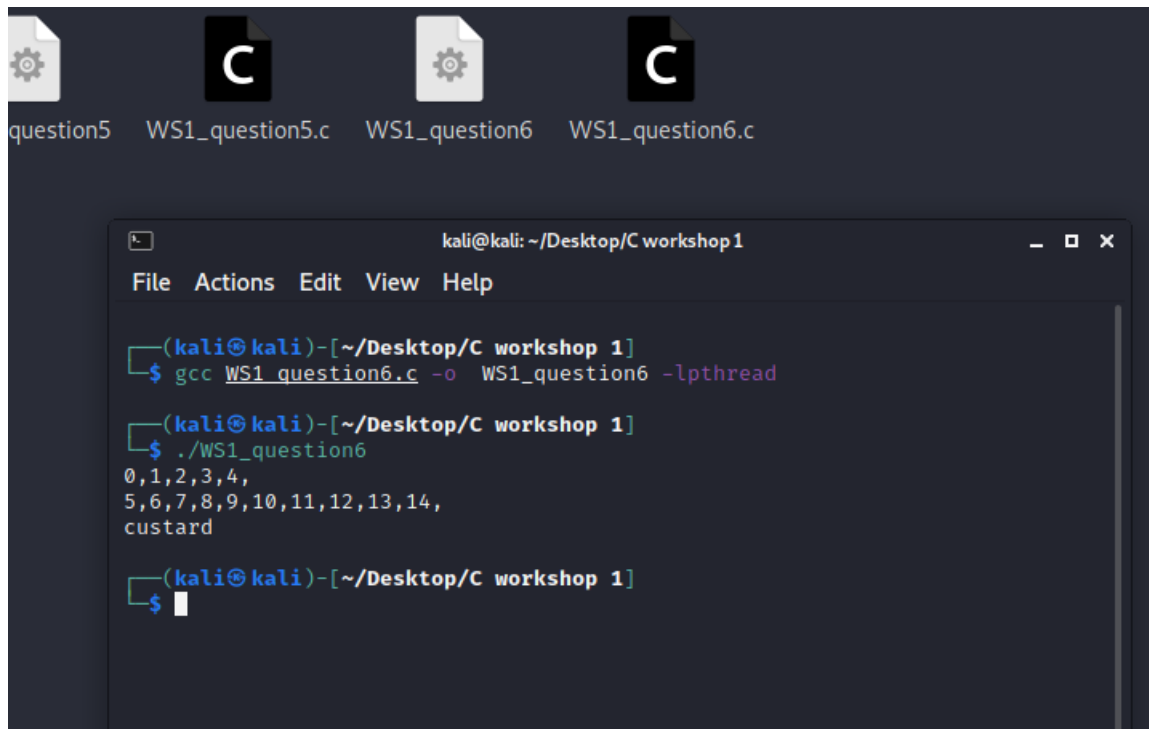
int main() {
    int i;
    for(i=0;i<5;i++)
    {
        printf("%d,", i);
    }
    printf("\n");

    while(i<10)
    {
        printf("%d,", i);
        i++;
    }

    do {
        printf("%d,", i);
        i++;
    }
    while(i<15);
    printf("\n");

    if(i>13){
        printf("custard\n");
    } else
    {
        printf("gravy\n");
    }

    return EXIT_SUCCESS;
}
```



The image shows a terminal window on a Kali Linux desktop. The desktop background is dark blue with four icons at the top: a gear icon, a black square with a white 'C', a gear icon, and another black square with a white 'C'. Below the icons are labels: 'question5', 'WS1\_question5.c', 'WS1\_question6', and 'WS1\_question6.c'. The terminal window has a title bar that reads 'kali@kali: ~/Desktop/C workshop 1'. It has a menu bar with 'File', 'Actions', 'Edit', 'View', and 'Help'. The terminal content shows three commands and their output:

```
(kali@kali)-[~/Desktop/C workshop 1]
$ gcc WS1_question6.c -o WS1_question6 -lpthread

(kali@kali)-[~/Desktop/C workshop 1]
$ ./WS1_question6
0,1,2,3,4,
5,6,7,8,9,10,11,12,13,14,
custard

(kali@kali)-[~/Desktop/C workshop 1]
$
```