Loops – Practice Problems
Problem 1

• Print even numbers between 1 and 50
  • Using for loop
  • Using while loop
• How would you change the code to print series 0, 5, 10, 15, ...., 50 (multiples of 5) ?
• How would you change the code to print even numbers between two given values?
Problem 1

For Loop
#include <stdio.h>
int main(void)
{
    int i;
    for (i = 0; i <= 50; i = i + 2)
        printf("%d, ", i);
}

While Loop
#include <stdio.h>
int main(void)
{
    int i = 0;
    while (i <= 50)
    {
        printf("%d, ", i);
        i = i + 2;
    }
}
Problems 2 and 3

• Problem 2: User provides number of values to printed in the series, print multiple of 5 series for only that many numbers e.g. User entered 4 then printed series will be: 0, 5, 10, 15

• Problem 3: User enters two values, exchange the values using extra variable
Problem 2 – Two different solutions using for loop

• #include <stdio.h>
• int main(void)
• {
•     int n=0, i=0;
•     printf("How many values to be printed? :");
•     scanf("%d", &n);
•     for(i=0; i<n; i++)
•         printf("%d, ", i*5);
•     return 0;
• }

• #include <stdio.h>
• int main(void)
• {
•     int n=0, i=0;
•     printf("How many values to be printed? :");
•     scanf("%d", &n);
•     for(; n>0; n--, i=i+5)
•         printf("%d, ", i);
•     return 0;
• }

Problem 2 – Using while loop

- #include <stdio.h>
- int main(void)
  {
    int n=0, i=0;
    printf("How many values to be printed? :");
    scanf("%d", &n);
    while (n>0)
      {
        printf("%d, ", i);
        n--;
        i=i+5;
      }
    return 0;
  }
Problem 3

- #include <stdio.h>
- int main(void)
- {
-   int n1, n2, temp;
-   printf("Enter two values seperated by space : ");
-   scanf("%d %d", &n1, &n2);
-   temp = n1;
-   n1 = n2;
-   n2 = temp;
-   printf("Exchanged values are %d and %d ", n1, n2);
-   return 0;
- }
Problem 4 and 5

• Problem 4: User has provided number of values to be printed, print Fibonacci series for that many values (Fibonacci series → 0, 1, 1, 2, 3, 5, 8, 13...)

• Problem 5: Print the prime numbers between two given values
Problem 4 – Fibonacci series

```c
#include <stdio.h>

int main(void)
{
    int n, n1=0, n2=1, n3;
    printf("How many Fibonacci values to print? : ");
    scanf("%d", &n);
    printf("%d, %d, ", n1, n2);
    n = n - 2;
    while (n>0)
    {
        n3 = n1 + n2;
        printf("%d, ", n3);
        n1 = n2;
        n2 = n3;
        n--;
    }
    return 0;
}
```
Problem 5 – Prime numbers in a given range

- `#include <stdio.h>`
- `int main(void)`
- `{`
  - `int n, i, start, end;`
  - `printf("Enter min and max values: ");`
  - `scanf("%d %d", &start, &end);`
  - `for (n=start; n<=end; n++)`
  - `{`
    - `for (i=2; i<n; i++)`
    - `{`
      - `if (n%i == 0)`
      - `{`
        - `break;`
      - `}`
      - `if (i == n)`
      - `{`
        - `printf("Prime Number: %d\n", n);`
      - `}`
    - `}`
  - `}`
  - `return 0;`
- `}`
Problem 6

• Problem 6: If user enters vowel exit otherwise continue reading characters from keyboard. Use do...while loop
Problem 6

- `#include <stdio.h>`
- `int main(void)`
  - `{`
    - `char c;`
    - `printf("Enter a character : \n");`
    - `do`
      - `{`
        - `scanf("%c", &c);`
        - `printf("Entered value is : %c\n", c);`
      - `}`
    - `while (c!='a' && c!='A' && c!='e' && c!='E' && c!='i' && c!='I' && c!='o' && c!='O' && c!='u' && c!='U');`
    - `return 0;`
  - `}`