CT2530 POSIX Operating Systems

Lab 2: Functions, Pointers, and Arrays

Q1:

main.c

Run

```c
#include <stdio.h>
int isEven(int n){

    if (n % 2 == 0)
        return 1;
    else
        return 0;

}int main(){
    int n;
    printf("Enter a positive integer : ");
    scanf("%d", &n);

    if (isEven(n)) {

        printf("%d is an even integer\n", n);

    }else{

        printf("%d is a non even integer\n", n);

    }return 0;
}
```

Output

```
/tmp/t7re52ZyqA.o
Enter a positive integer : 6
6 is an even integer
```

Q2:

main.c

Run

```c
#include <stdio.h>

int main() {

  int n, i, flag = 0;
  printf("Enter a positive integer: ");
  scanf("%d", &n);

  if (n == 0 || n == 1)
    flag = 1;

  for (i = 2; i <= n / 2; ++i) {

    if (n % i == 0) {
      flag = 1;
      break;
    }
  }

  if (flag == 0)
    printf("%d is a prime number.", n);
  else
    printf("%d is not a prime number.", n);

  return 0;
}
```

Output

```
/tmp/t7re52ZyqA.o
Enter a positive integer: 4
4 is not a prime number.
```

Q3:

main.c

```c
#include <stdio.h>
int isPrime(int n){
    if (n == 1)
        return 0;

    for (int i = 2; i <= n / 2; i++) {
        if (n % i == 0)
            return 0;
    }
    return 1;
}
void generatePrimes(int n){
    int num = 1, count = 0;
    while (1)
    {
        if (isPrime(num))
        {
            printf("%d ", num);
            count++;
        }
        num++;
        if (count == n)
            break;
    }
}
int main(){
    int n;
    printf("\nEnter a positive integer : ");
    scanf("%d", &n);
    generatePrimes(n);
    printf("\n");
    return 0;
}
```

Output

```
/tmp/t7re52ZyqA.o
Enter a positive integer : 5
2 3 5 7 11
```

Q4:

main.c

```c
#include <stdio.h>
int main(){
    int n = 69;
    char c = 'F';
    int *n_ptr = &n;
    char *c_ptr = &c;
    printf("\n");
    printf("Integer Value = %d\n", n);
    printf("Character Value = %c\n", c);
    *n_ptr = 14;
    *c_ptr = 'R';
    printf("New Integer Value = %d\n", n);
    printf("New Character Value = %c\n", c);
    return 0;
}
```

Output

```
/tmp/t7re52ZyqA.o
Integer Value = 69
Character Value = F
New Integer Value = 14
New Character Value = R
```

Q5:

main.c

Run

```c
#include <stdio.h>
void shift(int *a, int *b, int *c){

    int temp;
    temp = *a;
    *a = *b;
    *b = temp;

    temp = *a;
    *a = *c;
    *c = temp;
}
int main(){
    int a, b, c;
    printf("Enter three integers : ");
    scanf("%d%d%d", &a, &b, &c);
    printf("Values before Shift : ");
    printf("%d %d %d\n", a, b, c);
    shift(&a, &b, &c);
    printf("Values after Shift : ");
    printf("%d %d %d\n", a, b, c);
    return 0;
}
```

Output

```
/tmp/V1vjqWl9ot.o
Enter three integers : 1 2 3
Values before Shift : 1 2 3
Values after Shift : 3 1 2
```

Q6:

main.c

Run

```c
#include <stdio.h>
#define MAX 50
int countVowel(char word[])
{
    char i = 0;
    int vowel = 0;
    while (word[i] != '\0')
    {
        if (word[i] == 'a' || word[i] == 'e' || word[i] == 'i' || word[i] == 'o' || word[i] == 'u')
        {
            vowel++;
        }
        else if (word[i] == 'A' || word[i] == 'E' || word[i] == 'I' || word[i] == 'O' || word[i] == 'U'
            )
        {
            vowel++;
        }
        i++;
    }
    return vowel;
}
int main(){
    char word[MAX];
    printf("\nEnter a string : ");
    fgets(word, MAX, stdin);
    int number_of_vowel = countVowel(word);
    printf("Number of Vowels : %d\n", number_of_vowel);
    return 0;
}
```

Output

```
/tmp/V1vjqWl9ot.o
Enter a string : word
Number of Vowels : 1
```

Q7:

main.c

Run

Output

```c
#include <stdio.h>
int sum(int num[], int size){
    int array_sum = 0;
    for (int i = 0; i < size; i++)
    {
        array_sum += num[i];
    }
    return array_sum;
}
int findLargest(int num[], int size)
{
    int max = num[0];
    for (int i = 0; i < size; i++){
        if (max < num[i])
            max = num[i];
    }
    return max;
}
int findSmallest(int num[], int size){
    int min = num[0];
    for (int i = 0; i < size; i++){
        if (min > num[i])
            min = num[i];
    }
    return min;
}
int main(){
    int size = 5;
    int arr[size];
    printf("\nEnter 5 elements : ");
    for (int i = 0; i < size; i++){
        scanf("%d", &arr[i]);
    }
    int array_sum = sum(arr, size);
    printf("Sum of elements of Array are : %d\n", array_sum);
    printf("Sum of elements of Array are : %d\n", array_sum);
    int largest = findLargest(arr, size);
    printf("Largest elements of Array is : %d\n", largest);
    int smallest = findSmallest(arr, size);
    printf("Smallest elements of Array is : %d\n", smallest);
    return 0;
}
```

```
/tmp/V1vjqWl9ot.o
Enter 5 elements : 6 7 8 9 10
Sum of elements of Array are : 40
Largest elements of Array is : 10
Smallest elements of Array is : 6
```