GEBZE TECHNICAL UNIVERSITY

CSE 108 Computer Programming Lab 06

P1: 2 points	P2: 1 point	P3: 2 points	P4: 1 point	P5: 2 points	BONUS: 2 points

You are going to practice about enumeration, function pointers and 1-dimensional arrays in this lab.

Part 1 (2 point)

You are expected to write three functions in this part. These functions are **is_prime**, **is_odd** and **is_even** functions. Their declarations are given below. You must define new type as BOOL. Note that BOOL type includes TRUE (1) and FALSE (0) enumeration inside.

Function Prototype

```
BOOL is_prime(int number);
```

Function Prototype

```
BOOL is_odd(int number);
```

Function Prototype

```
BOOL is_even(int number);
```

Part 2 (1 point)

Since we are going to work on arrays you are expected write functions to show what an array contains. Implement the following two functions which print elements of an array.

Function Prototype

```
void print_int_array(const int p_arr[], int size);
```

Function Prototype

```
void print_char_array(const char p_arr[], int size);
```

Part 3 (2 points)

You are expected write a function to find first N integers which satify the function passed as a parameter. For example, you can call the function to insert first 10 prime numbers into the array. Whşle calling the function make sure that correct function pointer is passed as parameter. You can use this function, when you are asked to find and assign first 20 odd integers to an array, as well.

Function Prototype

```
void assign_numbers_to_array(int p_array[], int size, BOOL func(int));
```

Part 4 (1 point)

You have a character array which is given below. You are expected to delete special character from that array and insert resulting cahracters into another character array. Assume that output character array has a size large enough to hold the resulting characters. After calling change_array function (use ignored_char as '*'), you are expected to print c_arr1 and c_arr2 arrays.

Input Array (c_arr1)	*_***-_**_-*_*-**-*-*****-****-**_-**-_-*****-***
Output Array (c_arr2)	_-__-_-----_--_--

Function Prototype

```
int change_array(const char c_arr1[], char c_arr2[], int size, char ignored_char);
```

Part 5 (2 points)

You are expected to write functions to compute mean and standart deviation of an integer array. You can use math.h library. Do not forget to link math library, add **-lm** while linking. Calculate first 10 prime numbers' mean and standart deviation. Observe that Mean = 12.900 and Std Dev = 9.024 .

Mean	Standard Deviation
$M = \frac{\sum_{i=1}^{n} X_i}{n}$	$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (X_i - M)^2}{n-1}}$

Function Prototype
`double compute_mean_of_array(const int p_array[], int size);`

Function Prototype
`double compute_deviation_of_array(const int p_array[], int size);`

Bonus Part 6 (2 points)

Write the function reverse_array to reverse the array of first 10 prime numbers. You are not allowed to use another array inside this function. All operations should be performed on the array arr.

Input Array (first 10 prime number)	2 3 5 7 11 13 17 19 23 29
Updated Array (reversed)	29 23 19 17 13 11 7 5 3 2
`void reverse_array(int arr[], int size);`	