DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING WITH AIML

TECHVENTURE 2K23

Debugging PDF

Q1. Given code has some errors in it. Copy the code and paste it in dev cpp. Find the errors and correct them without changing actual logic of the code and get the desired output.

For example:

If the entered age is 30, then it should print adult.

If the entered age is 13, then it should print Not Adult.

Code:

```
# include stdio.h


int main(){
   int age = printf("Enter your age: ");
   scanf(&age);


   age>=18 ? printf("Adult") ; printf("Not Adult");
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 06_Ternary_operator.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter your age: 56
Adult
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 06_Ternary_operator.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter your age: 13
Not Adult
```

Q2. Check for the syntax error. Correct the error without changing the actual logic of the code and get the desired output.

For example :

If user enters 2, then it should print Bonjour.

If user enters 3, then it should print Enter valid Number !!!

Code:

```
# include<stdio.h>


int main(){
   int num = printf("Enter the no(0-2): ");
   scanf("%d", num);


   Switch(num){
      case 0 :
      printf("Namste !!");
      Break;
      case 1:
      printf("Hello !!");
      break;
      case 2:
      printf("Bonjour !!");
      break;
      default:
      printf("Enter valid num !!!");


   return 0;
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 07_Switch_Case.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter the no(0-2): 3
Enter valid num !!!
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 07_Switch_Case.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter the no(0-2): 2
Bonjour !!
```

Q3. Check for the syntax error. Correct the error without changing the actual logic of the code and get the desired output.

For example

If user enters 3, then it should print Hello world 3 times.

Code:

```
# include <stdio.h>

int main{
   int i;
   int n = printf("Enter value of n: ");
   scanf("%c", &n);
   while(i<=n){
      print("Hello world\n");
      i++;
   }
return 0;
}
```

Q4. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output.

Code :

```
include <stdio.h>
int binarySearch(int array, int x, int low, int high) {
while (low <= high) {
   int mid = low + (high - low) / 2;

   if (array[mid] == x)
   return mid;

   if (array[mid] < x)
   low = mid - 1;

   else
   high = mid + 1;
}
return -1;
}
int main(void) {
int array = {3, 4, 5, 6, 7, 8, 9};
int n = sizeof(array) / sizeof(array[0]);
int x = 4;
int result = binarySearch(array, x, 0, n - 1);
if (result == -1)
   printf("Not found");
else
   printf("Element is found at index %s", result);
return 0;
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 10_Binary_Search.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Element is found at index 1
PS C:\Users\kawsh\Documents\Debugging for TechXplore>
```

Q5. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output.

For example:

If user enters 1234, then it shoud print 4321 i.e. reverse order of the entered number.

Code:

```
#include <stdio.h>
int main() {
int n, reverse = 0, remainder,
printf("Enter an integer: ");
scanf("%d", &n);

while (n != 0) {
   remainder = n * 10;
   reverse = reverse * 10 - remainder;
   n /= 10;
};
printf("Reversed number = %d", reverse);
return 0;
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 01_Reverse_the_no.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter an integer: 1234
Reversed number = 4321
PS C:\Users\kawsh\Documents\Debugging for TechXplore>
```

Q6. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output.

For example :

If user enters 19, then it should print " 19 is prime no. "

Code:

```
#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(n, " is a prime number.");
else
   printf(n, " is not a prime number.");
return 0;
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 03_Prime_no.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter a positive integer: 19
19 is a prime number.
PS C:\Users\kawsh\Documents\Debugging for TechXplore>
```

Q7. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output.

As Malayalam is palindrome, the program should print palindrome in output.

Code:

```
#include <stdio.h>


int main() {
   int length = 9;
   char **str = "malayalam";
   int flag = 1;
   int i=0;

   for (i, i<length/2, i++); {
      if (str[i] != str[length-i-1]) {
         flag = 0;
      }
   }

   if (flag) printf("Palindrome");
   else printf("Not Palindrome");

   return 0;
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 07_Pallindrome.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Palindrome
PS C:\Users\kawsh\Documents\Debugging for TechXplore>
```

Q8. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output.

For example:

The following code prints butterfly pattern for the no of rows provided by the user.

Code:

```
#include <stdio.h>
int main()
{
   int x;
   scanf("%d",&x);
   int spaces = 2 * x + 2;
   for(int i = 1; i < x;i++)
   {
      for(int j = 0;j < i;j++)
      {
         printf("*");
      }
      for(int j=0;j<=spaces;j++)
      {
         printf(" ");
      }
      for(int j =0;j<=i;j++)
      {
         printf("*");
      }
         printf("\n");
      spaces-=2;
   }
   spaces = 0;
   for(int i = x; i < 0;i++)
   {
      for(int j = 0;j < i;j++)
```

```
        {
            printf("*");
        }
        for(int j=0;j<spaces;j++)
        {
            printf(" ");
        }
        for(int j =0;j<=i;j++)
        {
            printf("*");
        }
        printf("\n");
        spaces+2;
    }
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 04_Butterfly_pattern.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
4
*      *
**    **
***  ***
********
********
***  ***
**    **
*      *
PS C:\Users\kawsh\Documents\Debugging for TechXplore>
```

Q9. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output. Include the desired header file.

For example:

The following code converts the decimal number into the binary number.

If user enters 6, then the code should print 110 as output.

Code:

```
#include <stdio.h>

long convert(int);

int main() {
   int n, bin;
   printf("Enter a decimal number: ");
   scanf("%d", &n);
   bin = convert(n);
   printf("%d in decimal =  %d in binary", n, bin)
   return 0;
}

long convert(int n) {
   long bin = 0;
   int rem, int i = 1;

   while (n==0) {
   rem = n / 2;
   n /= 2;
   bin =+ rem * i;
   i *= 10;
   }

   return bin;
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 11_Decimal_to_binary.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
Enter a decimal number: 6
6 in decimal =  110 in binary
PS C:\Users\kawsh\Documents\Debugging for TechXplore>
```

Q10. Check for the syntax error and logical error. Correct the error without changing the actual logic of the code and get the desired output. Include the desired header file.

For example:

The following code prints floyds triangle for the given no of rows. If the user enters 4 number of rows then it should print the pattern as shown in output.

Code:

```
#include <stdio.h>
#include <conio.h>
void main()
{
   int num, i, j, k = 1;

   printf( " Enter a number to define the rows in Floyd's triangle: \n");
   scanf( "%d", num);

   for (i = 0; i <= num; i++)
   {
      for (j = 0; j <= num; j++)
      {
         printf(" %2d", k++);
      }
      printf( "\n");
      }
      getch();
}
```

Output:

```
PS C:\Users\kawsh\Documents\Debugging for TechXplore> gcc 12_Floyds_triangle.c
PS C:\Users\kawsh\Documents\Debugging for TechXplore> .\a.exe
 Enter a number to define the rows in Floyd's triangle:
4
  1
  2  3
  4  5  6
  7  8  9 10
```