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Practical – 8[Batch-71]

Code:

```c
#include <stdio.h>
#include <string.h>
#include <ctype.h>

char input[100];
int i, error;

void E();
void T();
void Eprime();
void Tprime();
void F();

int main() {
    i = 0;
    error = 0;

    printf("Enter an arithmetic expression: "); // Example: a+a*a
    fgets(input, sizeof(input), stdin);
    input[strcspn(input, "\n")] = '\0';
```

```c
    E();

    if (strlen(input) == i && error == 0) {
        printf("\nString Accepted!\n");
    } else {
        printf("\nString Rejected!\n");
    }


    return 0;
}


void E() {
    T();
    Eprime();
}


void Eprime() {
    if (input[i] == '+') {
        i++;
        T();
        Eprime();
    }
}


void T() {
    F();
    Tprime();
}
```
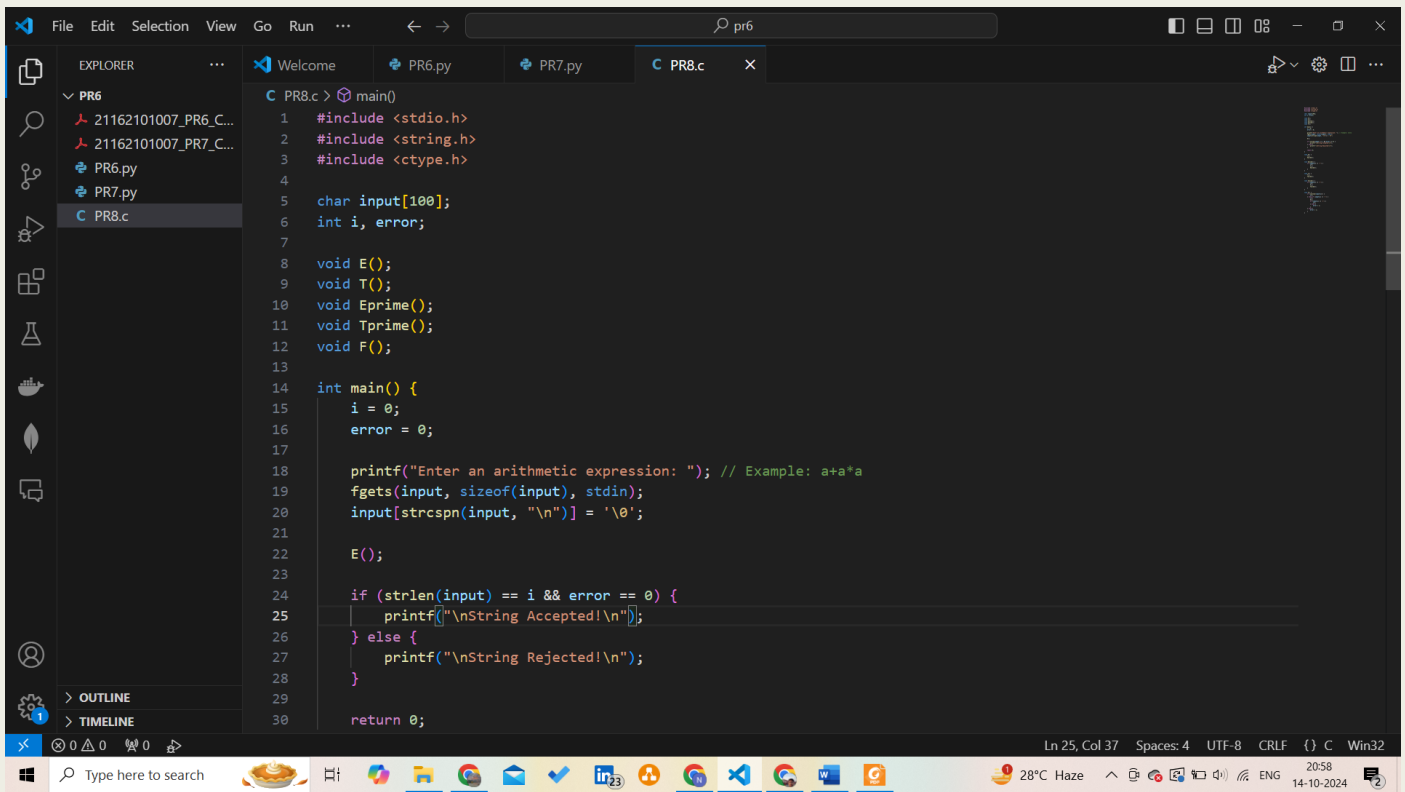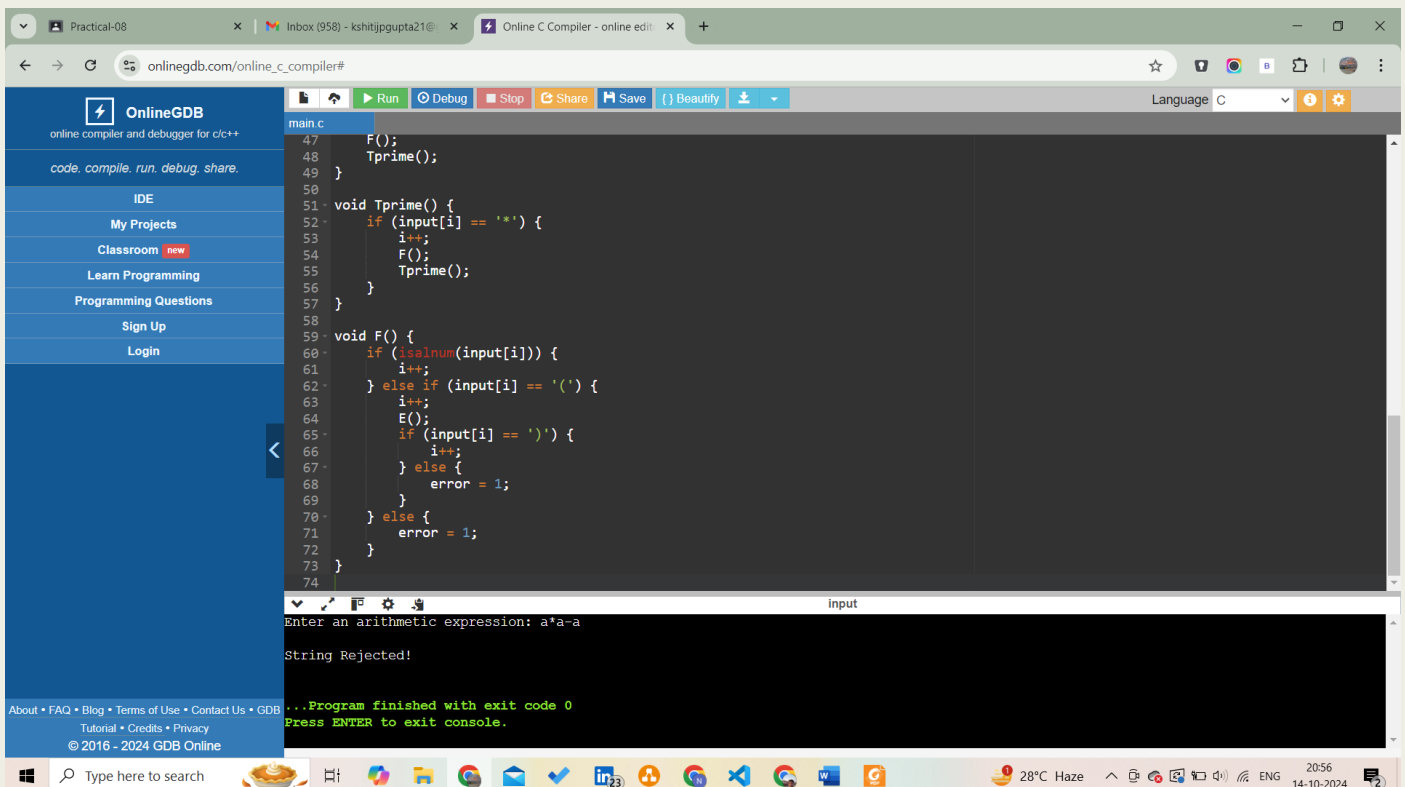
```
void Tprime() {
    if (input[i] == '*') {
        i++;
        F();
        Tprime();
    }
}


void F() {
    if (isalnum(input[i])) {
        i++;
    } else if (input[i] == '(') {
        i++;
        E();
        if (input[i] == ')') {
            i++;
        } else {
            error = 1;
        }
    } else {
        error = 1;
    }
}
```

```c
#include <stdio.h>
#include <string.h>
#include <ctype.h>

char input[100];
int i, error;

void E();
void T();
void Eprime();
void Tprime();
void F();

int main() {
    i = 0;
    error = 0;

    printf("Enter an arithmetic expression: "); // Example: a+a*a
    fgets(input, sizeof(input), stdin);
    input[strcspn(input, "\n")] = '\0';

    E();

    if (strlen(input) == i && error == 0) {
        printf("\nString Accepted!\n");
    } else {
        printf("\nString Rejected!\n");
    }

    return 0;
```

OUTPUT:


```c
        F();
        Tprime();
    }
}

void Tprime() {
    if (input[i] == '*') {
        i++;
        F();
        Tprime();
    }
}

void F() {
    if (isalnum(input[i])) {
        i++;
    } else if (input[i] == '(') {
        i++;
        E();
        if (input[i] == ')') {
            i++;
        } else {
            error = 1;
        }
    } else {
        error = 1;
    }
}
```

Enter an arithmetic expression: a*a-a

String Rejected!

...Program finished with exit code 0
Press ENTER to exit console.

main.c

```c
47          F();
48          Tprime();
49      }
50
51      void Tprime() {
52          if (input[i] == '*') {
53              i++;
54              F();
55              Tprime();
56          }
57      }
58
59      void F() {
60          if (isalnum(input[i])) {
61              i++;
62          } else if (input[i] == '(') {
63              i++;
64              E();
65              if (input[i] == ')') {
66                  i++;
67              } else {
68                  error = 1;
69              }
70          } else {
71              error = 1;
72          }
73      }
74
```

input

```
Enter an arithmetic expression: a+a-a

String Rejected!


...Program finished with exit code 0
Press ENTER to exit console.
```

```c
47          F();
48          Tprime();
49      }
50
51      void Tprime() {
52          if (input[i] == '*') {
53              i++;
54              F();
55              Tprime();
56          }
57      }
58
59      void F() {
60          if (isalnum(input[i])) {
61              i++;
62          } else if (input[i] == '(') {
63              i++;
64              E();
65              if (input[i] == ')') {
66                  i++;
67              } else {
68                  error = 1;
69              }
70          } else {
71              error = 1;
72          }
73      }
74
```

input

```
Enter an arithmetic expression: a+a*A

String Accepted!


...Program finished with exit code 0
Press ENTER to exit console.
```