Coding examples for postfix Calculator

CS 241
Data Organization using C

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```
#include <stdio.h>

int main(int argc, char *argv[])
{ char *inputString;
  int i=0;
  printf ("Wellcome To stringNamer.....\n");

  if (argc != 2)
  { printf("Usage:\n stringNamer str\n");
    return -1;
  }

  inputString = argv[1];
```

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Infix to Postfix

Infix: 4*(2+3)

2 3 + 4 *

Infix: $(7^2 + 3(2 + 16))/ (56 + 123)$

2 16 + 3 * 7 7 * + 56 123 + /

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echoArguments.c

```
int main(int argc, char *argv[])
{ int i=0;
  printf ("Wellcome To echoArguments.....\n");
  printf ("Number of arguments = %d\n", argc);

  for (i=0; i<argc; i++)
  { printf("    argv[%d]=%s\n", i, argv[i]);
  }
  printf ("Done.\n");
  return 0;
}

//Test Cases:
//  echoArguments pi is about 3.1415
//  echoArguments *
```

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echoArguments.c: Test Case

Test Cast:

```
echoArguments pi is about 3.1415
```

Result:

```
Wellcome To echoArguments.....
Number of arguments = 5
      argv[0]=echoArguments
      argv[1]=pi
      argv[2]=is
      argv[3]=about
      argv[4]=3.1415
```

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stringNamer.c: Part 1

```
#include <stdio.h>

int main(int argc, char *argv[])
{ char *inputString;
  int i=0;
  printf ("Wellcome To stringNamer.....\n");

  if (argc != 2)
  { printf("Usage:\n stringNamer str\n");
    return -1;
  }

  inputString = argv[1];
  ...
```

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stringNamer.c: Part 2

```
  while (inputString[i] != '\0')
  { char c = inputString[i];
    if (c == '+')
    { printf("inputString[%d] is a plus sign.\n", i);
    }
    else if (c == '*')
    { printf("inputString[%d] is a multiplication
              sign.\n", i);
    }
    else if (c >= '0' && c <= '9')
    { printf("inputString[%d] is a digit.\n", i);
    }
    else
    { printf("inputString[%d] is an unrecognized
             symbol.\n", i);
    }
    i++;
  }
```

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strToInt.c: Part 1

```
#include <stdio.h>

int main(int argc, char *argv[])
{ char *inputString;
  int i=0;
  int number = 0;
  printf ("Wellcome To strToInt.....\n");

  if (argc != 2)
  { printf("Error** strToInt takes exactly one
            argument.\n");
    return -1;
  }

  inputString = argv[1];
  ...
```

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strToInt.c: Part 2

```
while (inputString[i] != '\0')
{ char c = inputString[i];

  if (c < '0' || c > '9')
  { printf("Error** strToInt expects a character
            array that contains only the digits
            0 through 9.\n");
    return -1;
  }
  number = number*10 + c-'0';
  i++;
}
printf ("The number is: %d\n", number);
...
```

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Sample Quiz: What is the Output

```
#include <stdio.h>
int main()
{ char str[] = "612";
  int i=0;
  int number = 0;
  while (str[i] != '\0')
  { char c = str[i];
    number = number*10 + c-'0';
    i++;
    printf ("%c, %d, %d : ", c, i, number);
  }
}
```

a) 6, 1, 6 : 1, 2, 61 : 2, 3, 612
b) 6, 0, 6 : 1, 1, 61 : 2, 2, 612
c) 6, 1, 600 : 1, 2, 610 : 2, 3, 612
d) 6, 0, 600 : 1, 1, 610 : 2, 2, 612
e) segmentation fault

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Geek Humor

- There are 10 types of people: those who understand binary, and those who do not understand it.

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Make strToInt.c Read Binary Strings

```
while (inputString[i] != '\0')
{ char c = inputString[i];

  if (c < '0' || c > '9')
  { printf("Error** strToInt expects a character
            array that contains only the digits
            0 through 9.\n");
    return -1;
  }
  number = number*10 + c-'0';
  i++;
}
printf ("The number is: %d\n", number);
...
```

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Sample Quiz: What is the Output

```
#include <stdio.h>
int main()
{ char str[] = "1011";
  int i=0;
  int number = 0;
  while (str[i] != '\0')
  { char c = str[i];
    number = number*2 + c-'0';
    i++;
    printf ("%c, %d, %d : ", c, i, number);
  }
}
```

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Simple Debugging

```
...
while (inputString[i] != '\0')
{ char c = inputString[i];
  printf ("i=%d, c=%c\n", i, c);

  if (c >= '0' && c <= '9')
  {
    number = number*10 + c - '0';

    printf ("  number=%d, i=%d, c=%c\n",
              number, i, c);
  }
  i++;
}
printf ("The number is: %d\n", number);
...
```

If program is in more than one file, include file name

indent

\n very important

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