**PS1-Qsn 1**

#include <stdio.h>

#define MAXSTARS 10

int convertToOdd(int mStar);

void printBlank(int \*maxBlank);

void printStars(int \*maxStars);

**int main()**

{

int maxStars = convertToOdd(MAXSTARS);

int maxBlank = maxStars / 2;

int currentStars = 1;

do

{

printf("\n");

printBlank(&maxBlank);

printStars(&currentStars);

} while (currentStars <= maxStars);

printf("\n");

return 0;

}

**int convertToOdd(int mStar)**

{

int mStars;

if (0 == mStar % 2)

{

mStars = mStar + 1;

}

else

{

mStars = mStar;

}

return mStars;

}

**void printBlank(int \*maxBlank)**

{

for (int i = 0; i < \*maxBlank; i++)

{

printf(" ");

}

\*maxBlank -= 1;

}

**void printStars(int \*maxStars)**

{

for (int j = 1; j <= \*maxStars; j++)

{

printf("\*");

}

\*maxStars += 2;

}

**PS1-Qsn 2**

#include <stdio.h>

#define MAXSTARS 10

int convertToOdd(int mStar);

void printBlank(int \*maxBlank);

void printStars(int \*maxStars);

**int main()**

{

  int maxStars = convertToOdd(MAXSTARS);

  int currentStars = maxStars;

  int maxBlank = 1;

  do

  {

    printf("\n");

    printBlank(&maxBlank);

    printStars(&currentStars);

  } while (currentStars >= 1);

  printf("\n");

  return 0;

}

**int convertToOdd(int mStar)**

{

  int mStars;

  if (0 == mStar % 2)

  {

    mStars = mStar + 1;

  }

  else

  {

    mStars = mStar;

  }

  return mStars;

}

**void printBlank(int \*maxBlank)**

{

  for (int i = 0; i < \*maxBlank; i++)

  {

    printf(" ");

  }

  \*maxBlank += 1;

}

**void printStars(int \*maxStars)**

{

  for (int j = 1; j <= \*maxStars; j++)

  {

    printf("\*");

  }

  \*maxStars -= 2;

}

**PS1-Qsn 3**

#include <stdio.h>

#define MAXSTARS 10

int convertToEven(int mStar);

void doWhileLoop(int mStars);

void print(int mStar, int mBlank);

void printBlank(int maxBlank);

void printStars(int maxStars);

**int main()**

{

int maxStars = convertToEven(MAXSTARS);

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**int convertToEven(int mStar)**

{

int mStars;

if (0 == mStar % 2)

{

mStars = mStar;

}

else

{

mStars = mStar + 1;

}

return mStars;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = 0;

printStars(maxStar);

maxStar = maxStar / 2 - 1;

do

{

printf("\n");

maxBlank += 2;

print(maxStar, maxBlank);

maxStar -= 1;

} while (maxStar > 0);

maxStar = 1;

printf("\n");

do

{

print(maxStar, maxBlank);

maxStar += 1;

maxBlank -= 2;

printf("\n");

} while (maxStar < mStars / 2);

maxStar = mStars;

printStars(maxStar);

}

**void print(int mStar, int mBlank)**

{

int maxStar = mStar;

int maxBlank = mBlank;

printStars(maxStar);

printBlank(maxBlank);

printStars(maxStar);

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**PS1-Qsn 4**

#include <stdio.h>

#include <stdbool.h>

#define MAXSTARS 10

int convertToOdd(int mStar);

void printStraight(int mStar);

void printInverted(int mStar);

void printBlank(int \*maxBlank, bool incr);

void printStars(int \*maxStars, bool incr);

void doWhileLoop(int maxBlank, int currentStars, int maxStars, bool straight);

**int main()**

{

int maxStars = convertToOdd(MAXSTARS);

printStraight(maxStars);

printInverted(maxStars);

printf("\n");

return 0;

}

**int convertToOdd(int mStar)**

{

int mStars;

if (0 == mStar % 2)

{

mStars = mStar + 1;

}

else

{

mStars = mStar;

}

return mStars;

}

**void printStraight(int mStar)**

{

int maxStars = mStar;

int maxBlank = maxStars / 2;

int currentStars = 1;

bool straight = true;

doWhileLoop(maxBlank, currentStars, maxStars, straight);

}

**void printInverted(int mStar)**

{

int maxStars = mStar;

int currentStars = maxStars - 2;

int maxBlank = 1;

bool straight = false;

doWhileLoop(maxBlank, currentStars, maxStars, straight);

}

**void doWhileLoop(int maxBlank, int currentStars, int maxStars, bool straight)**

{

do

{

printf("\n");

printBlank(&maxBlank, straight);

printStars(&currentStars, straight);

} while (straight ? currentStars <= maxStars /\*Straight\*/ : currentStars >= 1 /\*Inverted\*/);

}

**void printBlank(int \*maxBlank, bool straight)**

{

for (int i = 0; i < \*maxBlank; i++)

{

printf(" ");

}

if (straight) // true for straight

{

\*maxBlank -= 1;

}

else

{

\*maxBlank += 1; // false for inverted

}

}

**void printStars(int \*maxStars, bool straight)**

{

for (int j = 1; j <= \*maxStars; j++)

{

printf("\*");

}

if (straight) // true for straight

{

\*maxStars += 2;

}

else

{

\*maxStars -= 2; // false for inverted

}

}

**PS1-Qsn 5**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = 1;

do

{

printStars(maxStar);

maxStar += 1;

printf("\n");

} while (maxStar <= mStars);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**PS1-Qsn 6**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

do

{

printStars(maxStar);

maxStar -= 1;

printf("\n");

} while (maxStar >= 1);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**PS1-Qsn 7**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printBlank(int maxBlank);

void printStars(int maxStars);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = 0;

do

{

printBlank(maxBlank);

printStars(maxStar);

maxStar -= 1;

maxBlank +=1;

printf("\n");

} while (maxStar > 0);

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**PS1-Qsn 8**

#include <stdio.h>

#define MAXLEN 10

int convertToOdd(int mLen);

void doWhileLoop(int mLen);

void print(int fBlk, int mBlk);

void printBlank(int maxBlank);

**int main()**

{

int maxLen = convertToOdd(MAXLEN);

doWhileLoop(maxLen);

printf("\n");

return 0;

}

**int convertToOdd(int mLen)**

{

int maxLen;

if (0 == mLen % 2)

{

maxLen = mLen + 1;

}

else

{

maxLen = mLen;

}

return maxLen;

}

**void doWhileLoop(int mLen)**

{

int maxLen = mLen;

int midPt = maxLen / 2 + 1;

int fwdBlank = midPt - 1;

int midBlank = 1;

printf("\n");

printBlank(fwdBlank);

printf("\*");

do

{

fwdBlank -= 1;

print(fwdBlank, midBlank);

midBlank += 2;

} while (fwdBlank > 0);

fwdBlank = 1;

midBlank -= 2;

do

{

midBlank -= 2;

print(fwdBlank, midBlank);

fwdBlank += 1;

} while (fwdBlank < 5);

printf("\n");

fwdBlank = midPt - 1;

printBlank(fwdBlank);

printf("\*");

}

**void print(int fBlk, int mBlk)**

{

int fwdBlank = fBlk;

int midBlank = mBlk;

printf("\n");

printBlank(fwdBlank);

printf("\*");

printBlank(midBlank);

printf("\*");

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 9**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = 1;

do

{

printStars(maxStar);

maxStar += 1;

printf("\n");

} while (maxStar <= mStars);

maxStar -= 2;

do

{

printStars(maxStar);

maxStar -= 1;

printf("\n");

} while (maxStar >= 1);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**PS1-Qsn 10**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = 0;

do

{

printBlank(maxBlank);

printStars(maxStar);

maxStar -= 1;

if(maxStar > 0) printf("\n");

maxBlank += 2;

} while (maxStar >= 1);

maxStar = 1;

do

{

maxBlank -= 2;

printf("\n");

printBlank(maxBlank);

printStars(maxStar);

maxStar += 1;

} while (maxStar <= mStars);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 11**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = mStars -1;

do

{

printBlank(maxBlank);

printStars(maxStar);

printf("\n");

maxBlank -= 1;

} while (maxBlank >= 0);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 12**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = mStars;

int midBlank = mStars - 2;

printBlank(maxBlank);

printStars(maxStar);

printf("\n");

do

{

maxBlank -= 1;

printBlank(maxBlank);

printf("\*");

printBlank(midBlank);

printf("\*");

printf("\n");

} while (maxBlank > 2);

maxBlank-=1;

printBlank(maxBlank);

printStars(maxStar);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 13**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = 0;

do

{

printBlank(maxBlank);

printStars(maxStar);

if(maxBlank < mStars - 2)

printf("\n");

maxBlank += 1;

} while (maxBlank < mStars -1);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 14**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = 0;

int midBlank = mStars - 2;

printBlank(maxBlank);

printStars(maxStar);

printf("\n");

do

{

maxBlank += 1;

printBlank(maxBlank);

printf("\*");

printBlank(midBlank);

printf("\*");

printf("\n");

} while (maxBlank < mStars - 2);

maxBlank = mStars -1;

printBlank(maxBlank);

printStars(maxStar);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 15**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int midBlank = 0; //mStars - 2;

printf("\*");

printf("\n");

do

{

printf("\*");

printBlank(midBlank);

printf("\*");

midBlank += 1;

printf("\n");

} while (midBlank < mStars-2) ;

printStars(maxStar);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 16**

#include <stdio.h>

#define MAXSTARS 9

int convertToOdd(int mStar);

void printBlank(int maxBlank);

void printStars(int maxStars);

**int main()**

{

int maxStars = convertToOdd(MAXSTARS);

int currentStars = maxStars;

int fwdBlank = 1;

int midBlank = currentStars - 4;

printStars(currentStars);

do

{

printf("\n");

printBlank(fwdBlank);

printf("\*");

printBlank(midBlank);

printf("\*");

midBlank-=2;

fwdBlank+=1;

} while ( midBlank >= 1);

printf("\n");

printBlank(fwdBlank);

printf("\*");

return 0;

}

**int convertToOdd(int mStar)**

{

int mStars;

if (0 == mStar % 2)

{

mStars = mStar + 1;

}

else

{

mStars = mStar;

}

return mStars;

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**PS1-Qsn 17**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void print(int mStar, int mBlank);

void printBlank(int maxBlank);

void printStars(int maxStars);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = 0;

int maxBlank = mStars;

do

{

print(maxStar, maxBlank);

maxBlank -=1;

maxStar += 1;

printf("\n");

} while (maxBlank >= 0);

maxStar = mStars;

maxBlank = 0;

do

{

print(maxStar, maxBlank);

maxBlank +=1;

maxStar -= 1;

printf("\n");

} while (maxStar >= 1);

}

**void print(int mStar, int mBlank)**

{

int maxStar = mStar;

int maxBlank = mBlank;

printBlank(maxBlank);

printStars(maxStar);

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*"); } }

**PS1-Qsn 18**

#include <stdio.h>

#define MAXSTARS 5

void doWhileLoop(int mStars);

void printStars(int maxStars);

void printBlank(int maxBlank);

**int main()**

{

int maxStars = MAXSTARS;

doWhileLoop(maxStars);

printf("\n");

return 0;

}

**void doWhileLoop(int mStars)**

{

int maxStar = mStars;

int maxBlank = mStars - 1;

do

{

printBlank(maxBlank);

printStars(maxStar);

maxStar -= 1;

if(maxStar > 0) printf("\n");

maxBlank -= 1;

} while (maxStar >= 1);

maxStar = 1;

do

{

maxBlank += 1;

printf("\n");

printBlank(maxBlank);

printStars(maxStar);

maxStar += 1;

} while (maxStar <= mStars);

}

**void printStars(int maxStars)**

{

for (int j = 1; j <= maxStars; j++)

{

printf("\*");

}

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**PS1-Qsn 19**

#include <stdio.h>

#include <stdbool.h>

#define NOOFCHARS 5

#define STARTCHAR 'A'

void doWhileLoop(char startCh, int nChar);

void printRemainingLines(char ch, int nChar);

void printChSeries(char \*ch, int nPr, bool incr);

void printBlank(int maxBlank);

void printA\_Char(char ch);

**int main()**

{

int noOfChar = NOOFCHARS;

char startChar = STARTCHAR;

doWhileLoop(startChar, noOfChar);

return 0;

}

**void doWhileLoop(char startCh, int nChar)**

{

char startChar = startCh;

int cnt = 0;

int noOfChar = nChar;

int noOfFwdChar = noOfChar;

int noOfRevChar = noOfFwdChar - 1;

do

{

printA\_Char(startChar);

startChar += 1;

cnt += 1;

} while (cnt < noOfFwdChar);

startChar -= 1;

cnt = 0;

do

{

startChar -= 1;

printA\_Char(startChar);

cnt += 1;

} while (cnt < noOfRevChar);

printf("\n");

printRemainingLines(startChar, noOfChar);

}

**void printRemainingLines(char aCh, int nChar)**

{

char ch = aCh;

int noOfChar = nChar;

int maxBlank = 1;

int noOfFwdChar = noOfChar - 1;

bool incr = true;

do

{

incr = true;

printChSeries(&ch, noOfFwdChar, incr);

printBlank(maxBlank);

ch -= 1;

incr = false;

printChSeries(&ch, noOfFwdChar, incr);

maxBlank += 2;

noOfFwdChar -= 1;

ch += 1;

printf("\n");

} while (noOfFwdChar > 0);

}

**void printChSeries(char \*ch, int noOfChar, bool incr)**

{

int noOfFwdChar = noOfChar;

do

{

printf("%c", \*ch);

if (incr)

{

\*ch += 1;

}

else

{

\*ch -= 1;

}

noOfFwdChar -= 1;

} while (noOfFwdChar > 0);

}

**void printBlank(int maxBlank)**

{

for (int i = 0; i < maxBlank; i++)

{

printf(" ");

}

}

**void printA\_Char(char ch)**

{

printf("%c", ch);

}

**PS1-Qsn 20**

#include <stdio.h>

#define MAXNOOFLINES 5

#define FIRSTCHAR '1'

#define SECONDCHAR '0'

void doWhileLoop(char ftCh, char seCh, int nChar);

void printPairs(char ftCh, char seCh, int nTimes);

void printA\_Char(char ch);

**int main()**

{

int noOfLines = MAXNOOFLINES;

char ftChar = FIRSTCHAR;

char seChar = SECONDCHAR;

doWhileLoop(ftChar, seChar, noOfLines);

return 0;

}

**void doWhileLoop(char ftCh, char seCh, int nLines)**

{

char ftChar = ftCh;

char seChar = seCh;

int noOfLines = nLines;

int lineNo = 1;

printA\_Char(ftChar);

printf("\n");

do

{

lineNo += 1;

int noOfPairs = lineNo / 2;

if (0 != lineNo % 2)

{

printA\_Char(ftChar);

}

printPairs(ftChar, seChar, noOfPairs);

printf("\n");

} while (lineNo < noOfLines);

}

**void printPairs(char ftCh, char seCh, int nTimes)**

{

char ftChar = ftCh;

char seChar = seCh;

int noOfTimes = nTimes;

for (int i = 0; i < noOfTimes; i++)

{

printA\_Char(seChar);

printA\_Char(ftChar);

}

}

**void printA\_Char(char ch)**

{

printf("%c", ch);

}